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SCIENCE IN HEALTH CARE
ABOARD U.S. NAVY SHIPS

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EXECUTIVE SUMMARY

Problem

There are currently over 6,600 women assigned aboard U.S. Navy ships. Although over 90 percent of these women are assigned to large auxiliary ships, such as destroyer tenders, submarine tenders, and repair ships, which have a medical officer on board, increasing numbers of women are being assigned to replenishment ships, ammunition ships, and salvage ships which are staffed by a non-physician health care provider.

Objective

In response to a request from the Bureau of Medicine and Surgery, this study was conducted to identify health care requirements of women aboard Combat Logistics Force ships and recommend medical department adjustments to meet those requirements.

Approach

From October, 1988, to October, 1989, summary patient data were collected quarterly from 20 ships (ADs, ASs, ARs, AOs, ARSs) representing 62,671 patient sick call visits. Approximately one-fourth of the crew members were women. Additional male and female patient encounter data were collected during November, 1988, and June, 1989, from 12,542 detailed sick call log entries aboard 20 ships.

Results

Results demonstrated that the monthly sick call rate for women (788/1,000) was 1.79 times greater than the monthly rate for men (440/1,000). Although sex differences in rate were greatest for genitourinary disorders (13:1), women visited sick call more than men for most illness categories. About 25 percent of all female illness-related visits were for female-specific problems, including urinary tract infections and sexually transmitted diseases. There were only minor sex differences in the number of services/procedures received, visit disposition, or duty status. Approximately five percent of the female crew became pregnant each quarter.

Conclusions

Given projections of female-specific disorders developed from these data, approximately 100 Navy health care providers were surveyed to provide senior medical department staffing recommendations for ARSs, AOs, AEs, and AFSs with a 25% female crew and a 50% female crew. On balance, these survey results suggested that all salvage ships and oilers with less than 75 women aboard should be staffed with an independent duty hospital corpsman. A physician's assistant should assume the responsibilities of the senior medical department representative aboard oilers with more than 75 women assigned, all ammunition ships with women assigned, and combat stores ships with less than 150 women aboard. Medical officers should be assigned to combat stores ships with more than 150 women. These estimates provide only general guidelines and are neither definitive or rigid. Results and recommendations are discussed in terms of preventive medicine and medical department staffing policies afloat. A complete list of recommendations, detailed illness prevalence estimates, and narrative comments from shipboard health care professionals are provided at the end of this report.

SEX DIFFERENCES IN HEALTH CARE REQUIREMENTS ABOARD U.S. NAVY SHIPS

There are currently over 6,600 women assigned aboard U.S. Navy ships. Although over 90 percent of these women are assigned to large auxiliary ships, such as destroyer tenders, submarine tenders, and repair ships, which have a medical officer on board, increasing numbers of women are being assigned to replenishment ships, ammunition ships, and salvage ships which are staffed by non-physician health care providers (i.e., a physician's assistant or an independent duty hospital corpsman). These increases in the number of women assigned to U.S. Navy ships can have significant implications for shipboard medical department staffing, equipment, training, and procedures.

Literature in the private sector clearly documents that women use more health care resources than men. Women in the reproductive age group use physician services at almost one and one-half times the rate of men in that age group, exclusive of utilization associated with pregnancy. Verbrugge,¹ for example, reports that health and morbidity statistics in the United States show women have higher illness rates than men: they report more days of illness and disability and a greater incidence of morbidity than males. Similarly, Nathanson² has reported that in all countries in which the necessary data are available, women report more acute illness than men, and make substantially greater use of health services.

It is the frequency of health problems and not the types of problems, however, which primarily distinguishes the health of men and women. As Verbrugge¹ points out, the leading problems associated with limitation, ambulatory care, and hospital episodes for men and women are very similar. Analyses of extensive data bases indicate that among both men and women 18-to-44 years of age, respiratory ailments are the leading daily health problem. These are followed by musculoskeletal symptoms, general symptoms (tiredness, edema, ache all over), nervous system symptoms (almost entirely headache), and then psychological symptoms (tension, nervousness). After that point, genitourinary problems rank higher for women, and skin/nails/hair problems rank higher for men.³

When considering those acute conditions which cause restricted activity or medical care, the leading conditions for both men and women are influenza and

common cold. Beyond these conditions, injuries become more problematic among men and genitourinary disorders accrue more frequently among women.³ In a study of ambulatory health care utilization among active duty Army personnel in garrison, Misner and his colleagues⁴ found that conditions in the top diagnostic categories were generally similar for both genders: pain in extremity, normal physical examinations, upper respiratory infections, and sprains/strains. The primary difference was that almost six percent of all female soldier visits were for normal pregnancies.

Although the general distribution of diagnoses in primary care appears quite similar between men and women, the introduction of women aboard smaller U.S. Navy ships which have traditionally been staffed by independent duty hospital corpsmen, may require adjustments in medical department staffing, training, and equipment. If, for example, a number of potentially serious female-specific problems could be expected to occur for a given crew size during isolated periods of deployment, the presence of a physician's assistant or a medical officer might be appropriate. In other instances, the appropriate adjustment for the addition of female crew members might be to provide the independent duty hospital corpsman with additional training in obstetrics and gynecology. The purpose of the present study was to (a) document the health care requirements of men and women aboard U.S. Navy ships with women assigned, and (b) recommend medical department adjustments appropriate to the introduction of women aboard smaller ships.

METHODS

Samples

The data in this one-year study consisted primarily of a) summary reports collected quarterly from shipboard medical departments, and b) individual patient encounters collected from shipboard sick call logs during the months of November and June. The sample was initially limited to surface force ships with women assigned. At the beginning of the study these included nine destroyer tenders (AD), two repair ships (AR), three oilers (AO), and four salvage ships (ARS). Two of the nine ADs were in extended overhaul and were excluded from the study. Combat stores ships (AFS) and ammunition ships (AE) were excluded because they had no more than six women assigned to any given ship. The medium auxiliary floating drydocks (AFDM) were excluded because of their unique operational status and minimum medical department

role. In April, 1989 the sample was expanded to include eight submarine tenders (AS) which were under the cognizance of the submarine force. Four other ASs were not included because they had no women assigned, or they were undergoing extended overhaul. Therefore, the total sample for quarterly data consisted of 7 ADs, 2 ARs, 4 ASs, 3 AOs, and 4 ARSs. Across these 20 ships, the total crew consisted of 10,869 males (76%) and 3,514 females (24%). The average age of the men was 27, range 18 to 55, and the average age of the women was 25, range 18 to 50. On average, each of the 20 ships provided data representing 9 months of the year.

In addition to the summary data collected each quarter, patient encounter data for a one-month period were collected from sick call logs aboard 15 ships in November, 1988, and 20 ships in June, 1989. The November sick call log data were collected aboard 7 ADs, 2 ARs, 2 AOs, and 4 ARSs representing a total crew of 7,688 males (76%) and 2,429 females (24%). The June sick call log data were collected from 6 ADs, 1 AR, 5 ASs, 4 AOs, and 4 ARSs. The total crew aboard these 20 ships was 10,159 men (75%) and 3,433 women (25%).

Based on these data, projections of the health care requirements of females aboard various combat logistics force ships were developed into a survey and forwarded to medical experts who were requested to use the projections to recommend the appropriate level of health care for each ship type. The following commands each received twenty survey forms and were requested to distribute them to staff members who were qualified to interpret these data and make recommendations: Naval Hospital, San Diego; Naval Hospital, Bethesda; Naval Hospital, Portsmouth; Naval Hospital, Long Beach; Health Sciences Education and Training Command, Bethesda; Naval School of Health Sciences, San Diego; Naval School of Health Sciences, Portsmouth Detachment; Commander, Surface Force Pacific Fleet, Force Medical Officer; and Commander, Surface Force Atlantic Fleet, Force Medical Officer. Of the two hundred surveys which were sent out, 106 were returned to the Naval Health Research Center (NHRC). Nearly half of the respondents were either hospital corpsmen (15%) or independent duty hospital corpsmen (32%). The remaining respondents were medical officers (32%), over one third of whom were specialists in obstetrics and gynecology, physician's assistants (9%), or some other medically-related profession (e.g., medical service corps, nurse corps) (12%).

Procedure

Through the appropriate chain of command, all surface force ships in the study were tasked to provide summary medical department reports to the Naval Health Research Center (NHRC) on a quarterly basis for a one-year period. The study period began on 1 October, 1988 and the first report was scheduled for 31 December 1988. Each quarterly report collected the following information: number and level of male and female medical department staff, number of men and women in the crew, number of male and female sick call visits during the quarter, number of male and female patient visits referred, number of male and female medical evacuations, number of pelvic examinations, number of new pregnancies during the quarter, total days at sea, and dates of deployment if the ship was deployed. In addition, general narrative comments regarding health care delivery to females aboard ship were solicited. The ASs within the submarine force were tasked to provide these quarterly reports for the final two quarters of the study (i.e., April through September, 1989).

In October, 1988, surface force ships were contacted and requested to provide the following additional information in their November sick call logs as part of the ongoing evaluation: patient sex, time in and time out of sick bay, and the status of each visit (initial versus follow-up). At the end of the data collection period, these logs were photocopied and forwarded to NHRC. In May, 1989, surface force and submarine force ships in the study were contacted and requested to use a special NHRC data collection form to record June sick call visits. This form, presented in Appendix A, provided a standardized method to collect a variety of important patient encounter information. Upon completion of the data collection, these forms were photocopied and forwarded to NHRC.

All sick call log data were coded and prepared for data entry by a team of NHRC personnel which consisted of research psychologists, hospital corpsmen, and graduate students in the field of public health. Two medical officers provided decision support as it became necessary. All narrative diagnoses were translated into numeric codes of the International Classification of Diseases, ninth revision (ICD-9).⁵ The classification process occurred in a group setting so that consensus could be obtained on difficult cases. All data were then double-entered by two data entry clerks on separate computer disks which were then matched and verified in accordance with normal NHRC procedures.

RESULTS

The results of this study are presented in seven primary sections, some with additional subsections. The first section briefly describes the general medical department characteristics which were found aboard the ships in this study. These characteristics include medical department staff size, crew size, and average patient volume. The next five sections address the nature and process of shipboard health care utilization and delivery. Within this topic area, the section on patient visit rate documents the general rate of health care utilization and assesses the correlates. The following section documents the reasons for patient visits with a particular emphasis on male and female differences. The section on health care providers briefly addresses those factors which influence patient delegation. The section following presents the distribution of medical services and procedures which are required by male and female shipboard patients. The section on disposition and duty status assesses male and female differences in the resolution of presenting medical problems. The final section describes the results of a survey in which 106 Navy health care providers were requested to recommend the level of health care provider which would be required to meet the responsibilities of the senior medical department representative aboard salvage ships, oilers, ammunition ships, and combat stores ships.

Shipboard Medical Department Characteristics

Across the 20 ships which provided quarterly summary data over the course of the one-year period, the size of the medical department staffs, excluding strikers, ranged from one to eighteen. As shown in Figure 1, there was a strong relationship between the size of the crew and the size of the medical department staff ($r=.98$). Aboard ships with a medical officer (ADs, ASs, ARs), there was an average of 12 medical department personnel and approximately 85 crew members for each member of the medical department staff. Aboard smaller ships assigned a physician's assistant or an independent duty hospital corpsman as the senior medical department representative (AOs, ARSs), there was an average of 3 medical department personnel and about 55 crew members for each member of the medical department.

Figure 2 represents a plot of the average number of daily sick call visits which occurred aboard different ship types during the weekdays. Additional analyses indicated that the greatest volume of patient visits occurred on Mondays and declined

substantially on the weekends. As shown in Figure 3, the majority of sick call visits (65%) occurred between 0800 and 1000. The median length of a sick call visit, including waiting time, was 20 minutes, and the mean was 32 minutes. There was no significant difference in the length of sick call visits between men (mean=31.9 minutes) and women (mean=31.7 minutes).

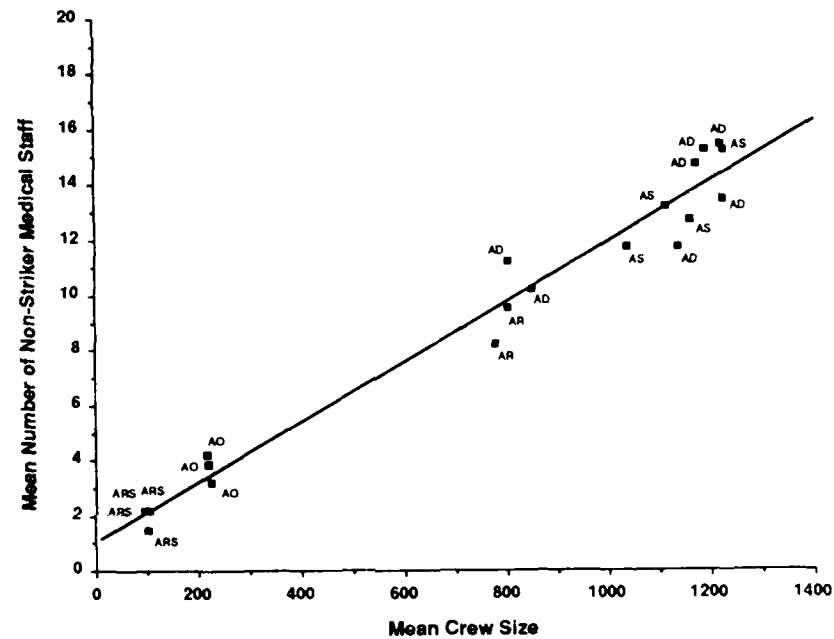


Figure 1. Relationship Between Medical Staff Size and Crew Size

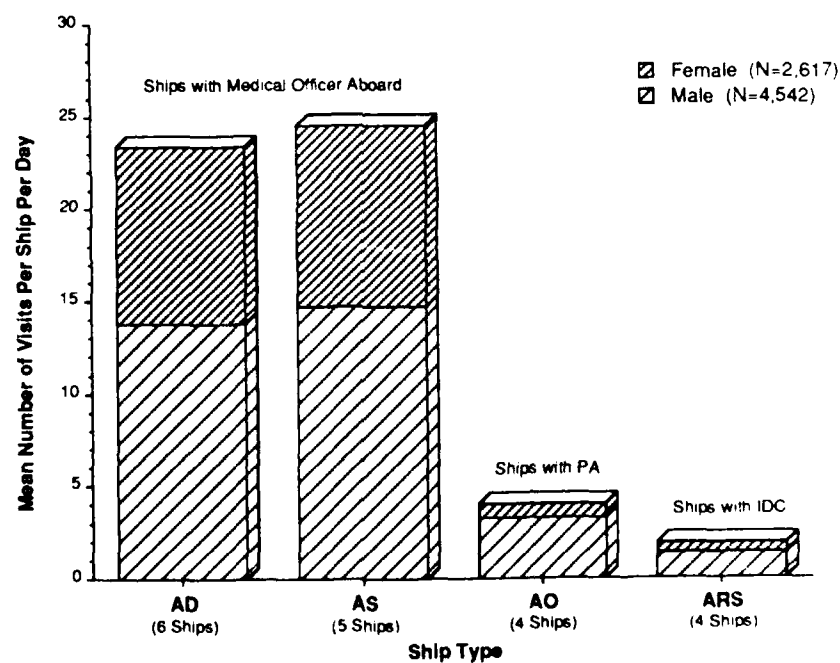


Figure 2. Average Medical Department Caseload Per Day

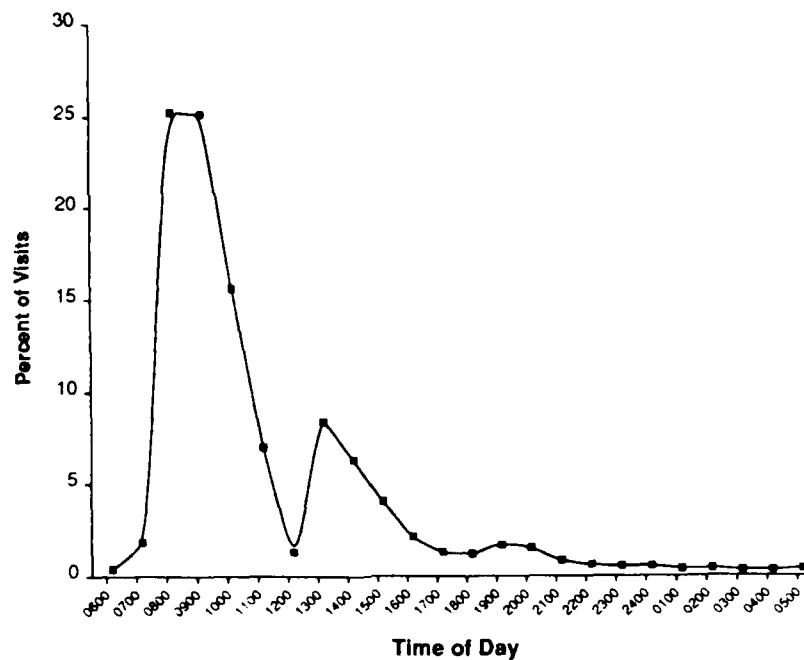


Figure 3. Distribution of Sick Call Visits By Time of Day

Patient Visit Rate

During the course of this one-year study, a total of 62,671 patient visits were reported in the quarterly reports from the 20 ships which participated. The monthly patient visit rate was computed using the following formula:

$$r = \left(\frac{\sum_{i=1}^q v_i}{3 * q * c} \right) * 1,000$$

where r is patient visit rate per month per 1,000 crew,

v is number of patient visits per quarter,

q is number of quarters of data provided, and

c is the crew size.

This provided an estimate of the number of sick call visits per 1,000 crew per month. An assessment of the summary sick call data from the quarterly reports demonstrated that across all 20 ships, the average patient visit rate was 525 per 1,000 crew per month. As indicated in Figure 4, however, the monthly shipboard sick call rate for

women (788/1,000) was 1.79 times greater than the monthly rate for men (440/1,000). Although the difference between the sick call rates for men and women varied somewhat between ship types, women consistently exhibited a significantly higher rate than men.

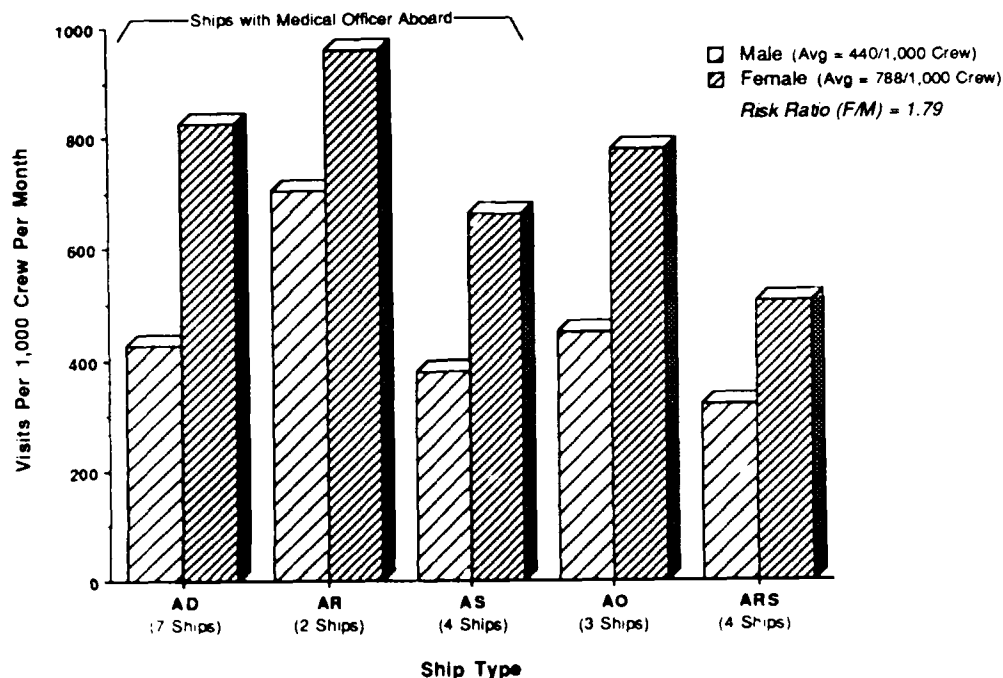


Figure 4. Sex Differences in Sick Call Visit Rate by Ship Type

In order to project the additional sick call visits which could be anticipated as male crew members are replaced with female crew members, the male sick call visit rate for each ship was multiplied by the number of billets occupied by females aboard that ship. This product provided an estimate of the number of sick call visits which would be made if the female billets were held by males. Within each ship, this estimate was then subtracted from the actual number of female sick call visits. This difference was used as an estimate of the additional sick call visits which accrued from that particular complement of females. As shown in Figure 5, the relationship between the number of females assigned to a ship and the additional sick call visits per month is fairly linear. The least squares regression line had a slope of .34 and accounted for 81 percent of the variance. Figure 5 may provide a useful tool in forecasting changes in sick call workloads from projected changes in male-to-female crew ratios.

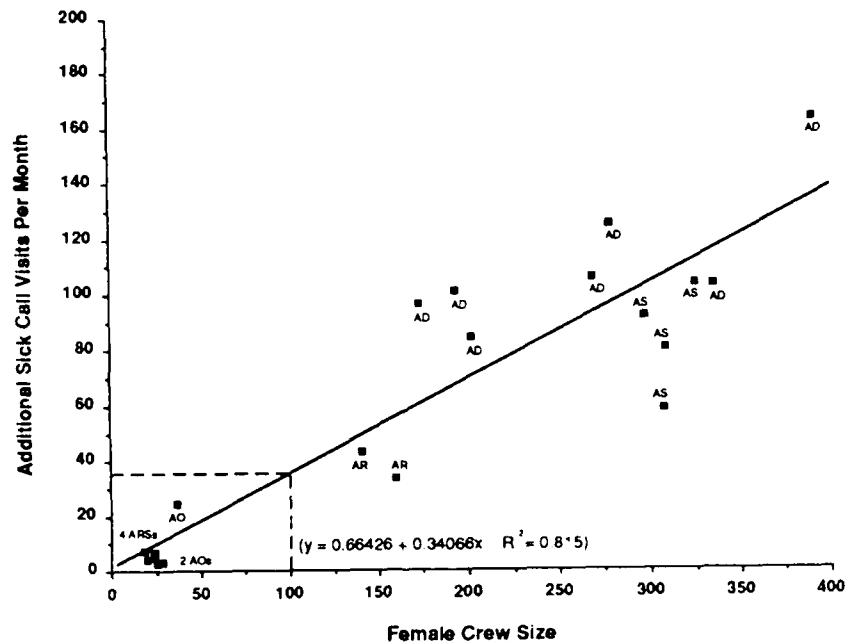


Figure 5. Projected Increases in Sick Call Visits as Male Crew is Replaced by Female Crew

Across all ships with a medical officer (N=13), an analysis was conducted to determine the relationship between the sex of the medical officer and the rate of sick call visits among male and female patients. As shown in Figure 6, the rate of sick call visits for men and women was relatively unaffected by the sex of the medical officer.

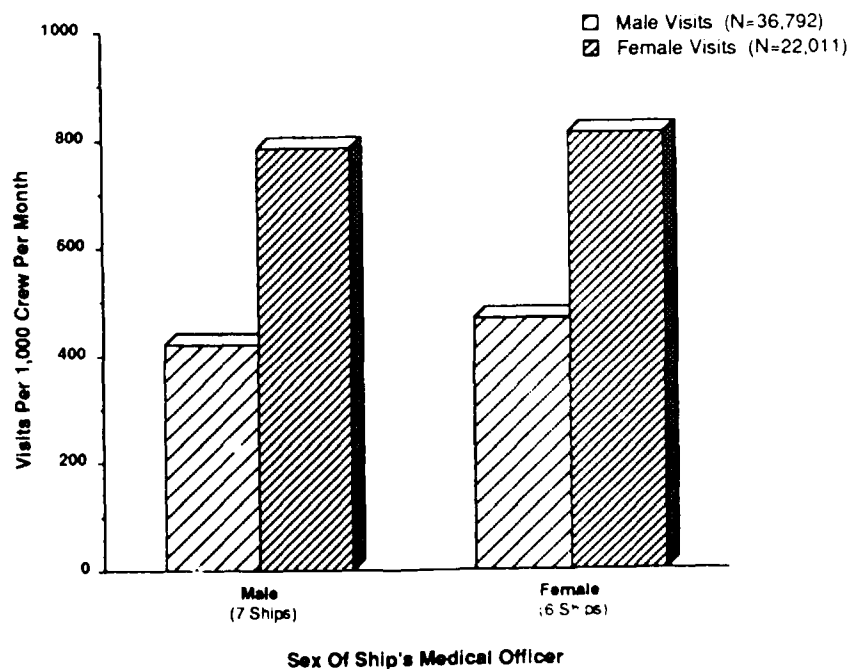


Figure 6. Sick Call Visit Rate by Sex of Medical Officer and Sex of Patient

An additional analysis of the sick call data from the month of June was conducted to assess differences in the rate of health care utilization between individuals in different shipboard occupational specialties. These rates for men and women were calculated by dividing the number of patient visits for each sex within each occupational speciality by the total number of males or females assigned in that speciality. Shipboard assignment data were extracted from the Navy Enlisted Master Record (EMR) maintained at the Naval Military Personnel Command. Because specific shipboard worksite assignment data are not available on the EMR, analyses were limited to rated personnel. Only those occupational specialties which had 50 or more female crew members across the 20 ships in this data set were included. Figure 7 presents the average male and female sick call rate, and the 95-percent confidence intervals, for each occupational speciality. The upper and lower confidence limits were derived as a Poisson-distributed variable in accordance with procedures described by Lilienfeld and Lilienfeld.⁶ In those occupational specialties in which the confidence intervals do not overlap, the sick call visit rates are significantly different.

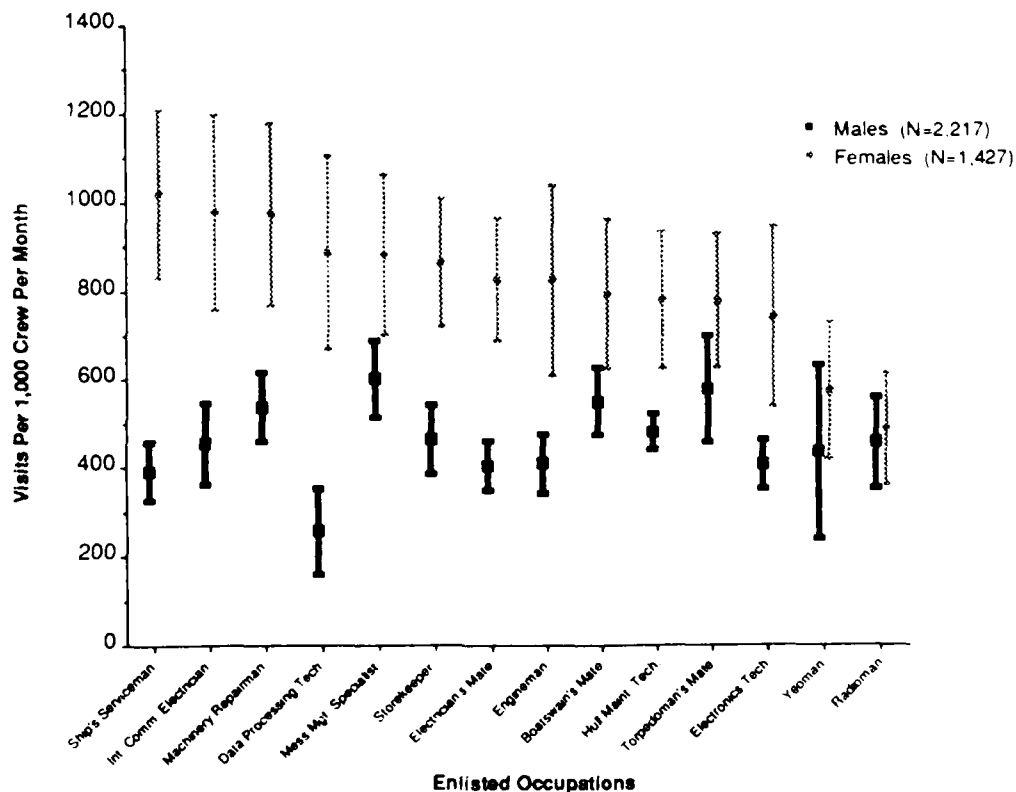


Figure 7. Monthly Sick Call Visit Rate by Occupation and Sex

As shown in Figure 7, the occupational specialties with the highest sick call utilization rates among males were mess management specialist (MS), torpedoman's mate (TM), boatswain's mate (BM), and machinery repairman (MR). The lowest rate occurred among data processing technicians (DP). Among women assigned to ships, the sick call utilization rates among radiomen (RM) and yeomen (YN) were lower than the utilization rates of many other occupational specialties. However, given the relatively small samples within these occupational specialties, these findings should be viewed as tentative until they have been replicated.

Reason for Patient Visit

Individual patient visit data were collected aboard 15 ships (N=4,843 visits) during the month of November, 1988, and 20 ships (N=7,699 visits) during the month of June, 1989. In this section, the primary reasons for male and female patient visits aboard ship will be analyzed to develop estimates of sick call visit rates for specific disorders, and identify potential sex differences in health care utilization. The majority of patient visits (70%) reported in this section represented the initial visit to sick call for a given condition. There was no significant difference between men and women on the proportion of initial and follow-up visits. In order to provide a general overview, the distribution of patient visits was grouped into three primary categories: illness/disorder, health services, and injury. Within the illness/disorder and health services categories, visits for female-specific problems or procedures were presented separately to assess their relative contributions. The health services category included a large variety of services such as inoculation, physical examination (e.g., check in, check out, reenlistment), pregnancy test, birth control prescription, Pap test, and audiogram.

As shown in Figure 8, the pattern of visit rate for each of the major categories remained consistent between the two sampling periods. In both the November and June sampling periods, female crew members visited sick call for illness/disorder at a substantially higher rate than males. Although 25 percent of the female visits for illness/disorder in each month were for female-specific problems, urinary tract infections (UTIs), or sexually transmitted diseases (STDs), significant differences in the visit rate remained after excluding female-specific visits ($p < .001$). The sex differences in the rate of visits for health services, however, were attributable to female-specific services such as birth control prescriptions, pregnancy and Pap tests.

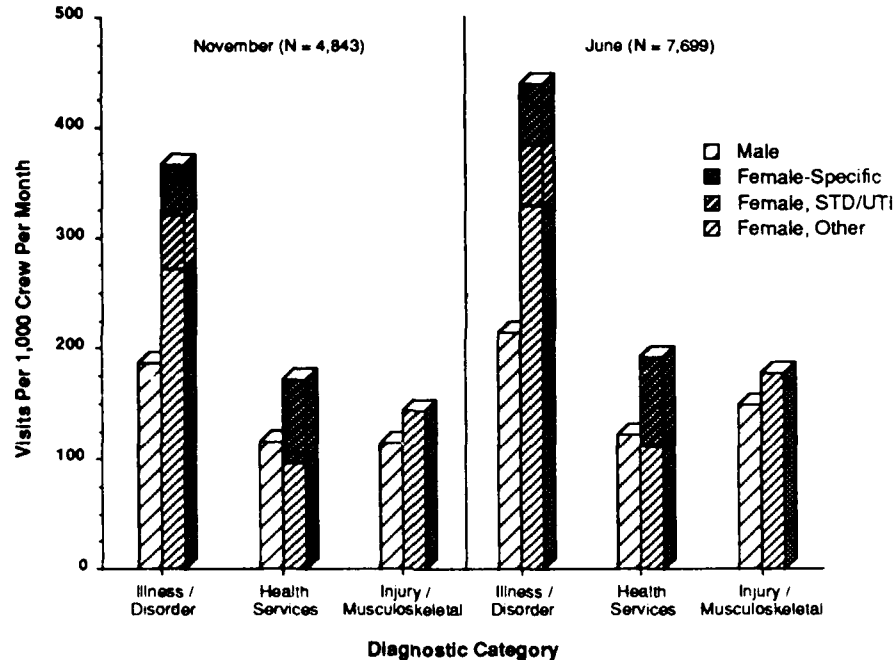


Figure 8. Sick Call Visit Rate by Reason for Visit and Sex

During the month of November, the rate of sick call visits for men and women was somewhat lower than the rate during the month of June. This lower rate is believed to reflect reduced shipboard manning policies during the holidays. The combination of the November and the June sick call rates, however, was within five percent of the annualized sick call visit rate estimates obtained from the quarterly summary reports. Given the similarities of the November and June sick call visit patterns for men and women, and the consistency with annual estimates of shipboard patient visit rates, the sick call data from the two sampling periods were merged to provide estimates of sick call visit rates for specific disorders, injuries, or services. This combined data set consisted of complete patient encounter records for 12,542 shipboard sick call visits during the months of November, 1988 and June, 1989.

Illness/Disorder

Overall, a total of 6,000 visits, or 48 percent of all visits, were made for the 247 specific illnesses and disorders reported during the sampling periods. These illnesses and disorders were initially classified into 14 major diagnostic categories. As shown in Table 1, infectious and parasitic diseases, respiratory illness, and diseases of the skin and subcutaneous tissues accounted for over half of all disease-related visits. The

monthly sick call visit rate for men and women for all diagnoses in each major diagnostic category is presented in Figure 9. Although the visit rate for women exceeds the rate for men in the majority of diagnostic categories, the difference is most pronounced for genitourinary disorders (female-to-male ratio = 13:1).

Table 1
DISTRIBUTION OF SICK CALL VISITS FOR ILLNESSES/DISORDERS

<u>Illness/Disorder Diagnostic Category</u>	<u>Percent</u>
Infectious or Parasitic Diseases	23
Diseases of the Respiratory System	20
Diseases of the Skin or Subcutaneous Tissue	14
Symptoms, Signs, or Ill-Defined Conditions	9
Diseases of the Nervous System or Sense Organs	9
Diseases of the Genitourinary System	8
Diseases of the Digestive System	7
Mental Disorders	3
Endocrine, Nutritional, Metabolic, or Immunity Disorder	3
Diseases of the Circulatory System	2
Neoplasms	1
Complications of Pregnancy, Childbirth, or the Puerperium	1
Diseases of the Blood or Blood-Forming Organs	< 1
Congenital Anomalies	< 1
	<hr/> 100

In order to provide a more detailed assessment of the contributions of specific illnesses or disorders, analyses were focused on only those diagnoses which accounted for more than one percent of all illness- or disorder-related sick call visits. This selection procedure provided a subset of 29 illnesses or disorders and eliminated the following major diagnostic categories because they contained no diagnoses which met the selection criterion: neoplasms, diseases of the blood and blood-forming organs, diseases of the circulatory system, and congenital anomalies. Although none of the diagnoses in the category which addressed complications of pregnancy, childbirth, and the puerperium met the selection criterion, they were retained in this section to provide comprehensive coverage of female-specific disorders. Similarly, all female-specific diagnoses in the genitourinary category and all sexually transmitted diseases (STDs) were retained.

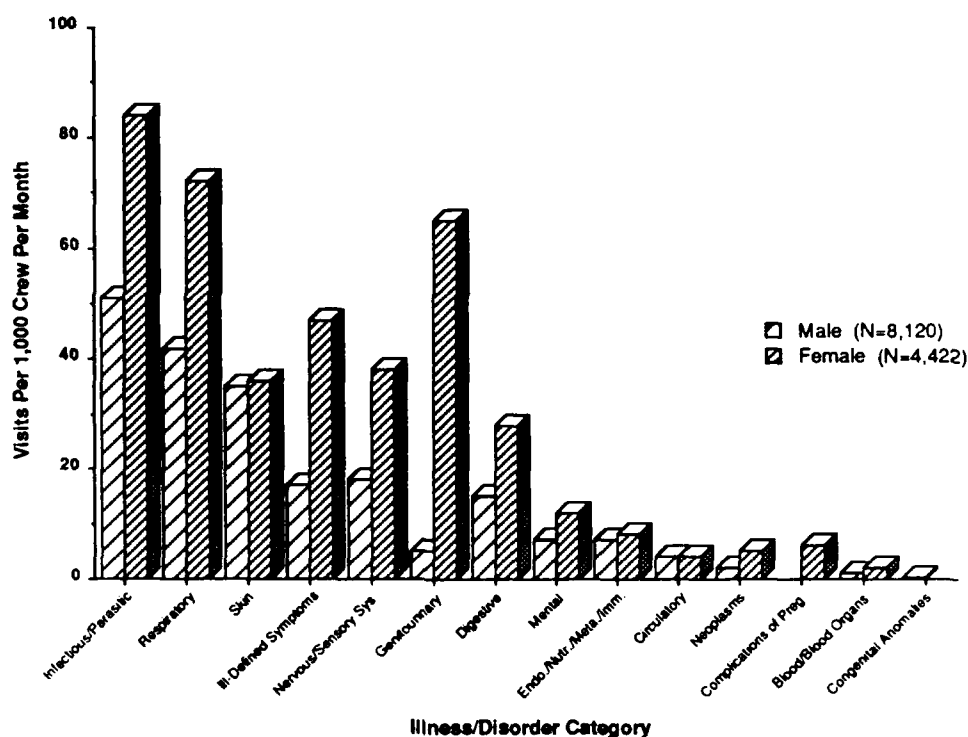


Figure 9. Sick Call Visit Rates by Illness/Disorder Category and Sex

Non-female-specific. The sick call visit rates for all diagnoses which met the selection criterion and were not female-specific disorders are presented in Table 2. A complete list of male and female rates for all reported diagnoses is presented in Appendix B. The 24 leading diagnoses which were not female-specific accounted for 56 percent of all sick call visits for illnesses or disorders and 27 percent of all sick call visits. These leading diagnoses were generally related to acute viral or bacterial infections of the respiratory system (e.g., upper respiratory infection, streptococcal sore throat, viral syndrome) or disorders of the skin or subcutaneous tissue (e.g., ingrown nail, hair follicle disorder, contact dermatitis). In 19 of the 24 (84%) diagnoses, the female visit rate exceeded the male visit rate. Although motion sickness was classified under "effects of external causes" in the injury section in accordance with ICD-9 procedures, it is interesting to note that the rate of sick call visits among women (14/1,000) was substantially higher than the rate among men (4/1,000).

Female-specific. Among female patients, female-specific disorders and STDs/UTIs accounted for 25 percent of all visits for illnesses/disorders and 14 percent of all visits. As shown in Table 3, the most prevalent disorder in this group was UTI.

Table 2

LEADING NON-FEMALE-SPECIFIC ILLNESSES/DISORDERS

	Visits Per 1,000			Female-
	Crew	Per Month	to-Male	
	Total	Female	Male	Ratio
INFECTIOUS/PARASITIC DISEASE				
Streptococcal sore throat or scarlatina [strep] *	11.9	19.1	9.5	2.02
Viral infection, unspecified site [viral syndrome / malaise]	10.5	15.9	8.7	1.83
Dermatophytosis [athlete's foot / tinea pedis/corporis / jock itch]	4.0	3.2	4.3	.76
Other intestinal infection [viral gastroenteritis]	3.4	4.8	3.0	1.61
RESPIRATORY SYSTEM DISEASE				
Acute upper respiratory infection, multiple/unspecified sites	24.5	33.4	21.6	1.55
Acute pharyngitis [sore throat / rule-out strep]	6.7	11.4	5.1	2.24
Acute sinusitis	5.0	8.5	3.9	2.21
Acute nasopharyngitis (common cold) [coryza]	3.8	6.1	3.0	2.03
SKIN OR SUBCUTANEOUS TISSUE DISEASE				
Disease of hair/follicles [ingrown hair / PFB / folliculitis]	6.2	1.0	8.0	.13
Contact dermatitis/other eczema [sunburn / poison ivy]	5.7	9.0	4.7	1.94
Disease of sebaceous glands [sebaceous cyst / ear cyst / acne]	4.6	5.3	4.4	1.21
Disease of nail [ingrown toenail]	4.3	3.4	4.7	.73
Other local infection of skin/subcutaneous tissue [other cyst]	2.9	2.0	3.2	.64
SYMPTOM, SIGN, OR ILL-DEFINED CONDITION				
Symptom of skin/integumentary tissue [rash/numb/edema]	4.9	8.0	3.9	2.04
Other symptom of abdomen/pelvis [abdominal pain/cramps]	4.0	9.7	2.2	4.45
Symptom involving head/neck [nosebleed/epistaxis/headache]	3.6	6.1	2.8	2.19
General symptom [fainted / high temp / fatigue / insomnia]	3.2	6.7	2.1	3.12
NERVOUS SYSTEM OR SENSE ORGANS DISORDER				
Disorder of external ear [otitis externa /cerumen/abscess]	5.5	8.0	4.7	1.70
Other disorder of ear [ear pain]	3.3	4.1	3.0	1.35
Disorder of conjunctiva [conjunctivitis]	3.1	5.3	2.4	2.19
DIGESTIVE SYSTEM DISEASE				
Other noninfective gastroenteritis/colitis [diarrhea]	7.0	10.7	5.8	1.84
Gastritis/duodenitis	4.9	8.9	3.5	2.51
MENTAL DISORDER				
Special symptom/syndrome, not elsewhere classified [psych counseling / tension headache]	3.6	6.7	2.6	2.58
ENDOCRINE/NUTRITIONAL/METABOLIC DISORDER				
Obesity/other hyperalimentation [overweight]	4.9	4.3	5.0	.85

* Terms in brackets represent frequently occurring shipboard examples.

Table 3

FEMALE-SPECIFIC ILLNESSES/DISORDERS

	Visits Per 1,000 Crew Per Month*	N
DISORDERS OF THE GENITOURINARY SYSTEM		
Other disorder of urethra/urinary tract [UTI]	20.81	122
Pain/symptoms associated with female genital organs [PMS / cramps]	13.99	82
Inflammatory disease of cervix, vagina, or vulva [vaginitis]	8.36	49
Disorders of menstruation/abnormal bleeding from female genital tract	5.29	31
Other disorders of female genital organs [vaginal rash/discharge]	7.16	42
Endometriosis	1.36	8
Noninflammatory disorder of ovary/fallopian tube/broad ligament	1.36	8
Benign mammary dysplasias	1.02	6
Other disorders of breast [breast pain/tender]	.68	4
Inflammatory disease of ovary/fallopian tube/pelvic tissue/peritoneum	.34	2
Noninflammatory disorders of vagina	.34	2
Noninflammatory disorders of cervix	.17	1
Infertility, female	.17	1
Benign neoplasm of breast	.17	1
Congenital anomalies of genital organs	.17	1
SEXUALLY TRANSMITTED DISEASES		
Candidiasis [moniliasis / yeast infection / monilia vaginitis]	14.16	83
Other disease due to virus/Chlamydiae [warts]	8.53	50
Other venereal disease [STD / NSU / NGU]	2.90	17
Herpes simplex [cold sores]	1.88	11
Early syphilis, symptomatic [condyloma]	1.36	8
Gonococcal infections	1.02	6
PREGNANCY-RELATED CONDITIONS/COMPLICATIONS		
Spontaneous abortion	1.71	10
Symptom of digestive system, pregnancy-related [morning sickness]	1.54	9
Other complications of pregnancy, not elsewhere classified	.85	5
Unspecified abortion	.68	4
Hemorrhage in early pregnancy	.68	4
Antepartum hemorrhage /abruptio placentae /placenta previa	.51	3
Other current conditions in mother complicating pregnancy	.51	3
Pain/symptoms associated with female genital organs, pregnancy-related	.51	3
Other symptoms involving abdomen/pelvis, pregnancy-related	.51	3
Ectopic pregnancy	.34	2
Early/threatened labor	.34	2
Other abnormal product of conception	.17	1
Excessive vomiting in pregnancy	.17	1
Delivery in a completely normal case	.17	1
Other/unspecified anemias, pregnancy-related	.17	1
Cystitis, pregnancy-related	.17	1
Symptoms involving skin/other integumentary tissue, pregnancy-related	.17	1
Symptom involving respiratory system, pregnancy-related	.17	1
Symptoms involving urinary system, pregnancy-related	.17	1
Total	100.78	591

* Rate estimates based on a small N may not be reliable.

Although pain/symptoms associated with female genital organs occurred with some frequency, the number of cases assigned this diagnosis was somewhat inflated because sick call records often lacked sufficient information for a more precise classification within the genitourinary category. It is also important to point out that some of the cases within the category "other viruses/Chlamydiae" were actually warts in areas other than the genital region. Therefore, this figure overestimates the prevalence of this particular female-specific condition. Other leading female-specific disorders included, candidiasis, inflammatory disease of cervix, vagina, or vulva, other disorders of female genital organs (e.g., vaginal rash, vaginal discharge), and other venereal diseases.

Across all female-specific disorders and STDs/UTIs in the shipboard sample, the rate of sick call visits was 101 per 1,000 female crew per month. Figure 10 represents a plot of the number of monthly sick call visits for female-specific disorders and STDs/UTIs by the female crew size aboard 23 ships. As shown in Figure 10, the relationship between the size of the female crew and the number of female-specific patient visits is quite strong ($r=.93$) and lends confidence to the projections presented in this figure.

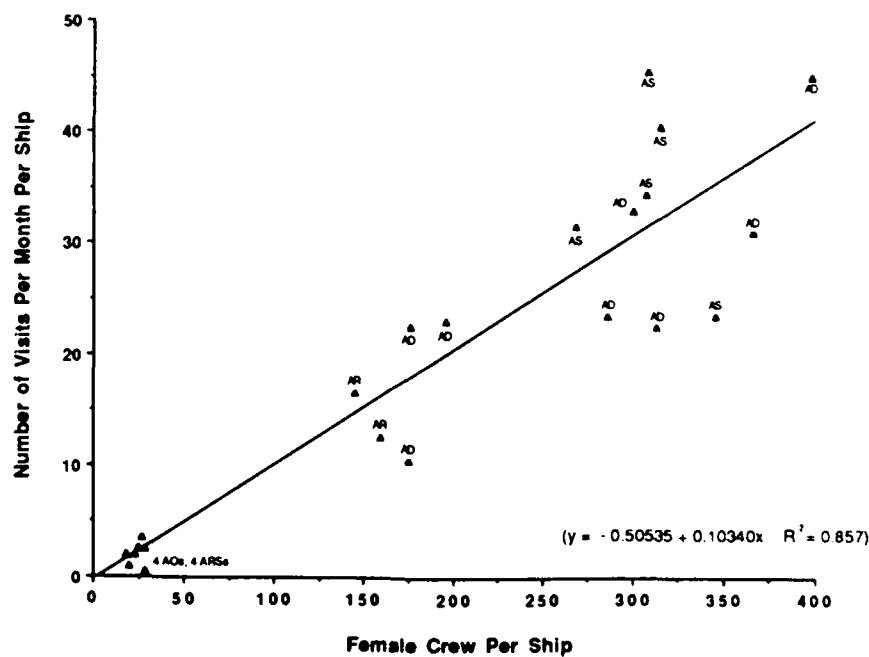


Figure 10. Relationship between Female Crew Size and Sick Call Visits for Female-Specific Disorders

Health Services

Health services, such as physical examinations, medical screening, and contraceptive management, accounted for 25 percent of all patient visits to sick bay. Although the female monthly visit rate for health services (183 per 1,000) exceeded the rate for males (119 per 1,000), this was due entirely to female-specific procedures such as Pap tests, birth control prescriptions, and pregnancy tests. A list of the health services provided in sick call is presented in Table 4. A complete list of health services is in Appendix B.

Table 4
HEALTH SERVICES

	Visits Per 1,000 Crew Per Month			Female- to-Male Ratio
	Total	Female	Male	
General medical examination [physical exam]	46.94	43.67	48.02	.91
Special exam [dental / visual / audio / x-ray / salpingoscopy / Jaeger's / CAAC]	14.64	13.14	15.13	.87
Other/unspecified aftercare [dressing / suture / Rx / INH follow-up / nicorette gum]	13.71	13.82	13.67	1.01
Encounter for administrative purposes [check-in/check-out]	10.71	13.48	9.81	1.37
Special screening for cardiovascular/respiratory/genitourinary disease [blood pressure check / EKG / HTN screen]	8.35	4.78	9.53	.50
Special screening for malignant neoplasm [Pap / pelvic]	7.80	31.05	.17	184.70
Contraceptive management [birth-control-pills / vasectomy]	5.95	22.52	.50	44.65
Special screen for pregnancy-related condition [HCG]	4.77	19.28	.00	--
Special screen for endocrine/nutritional/metabolic/immunity disorder [body fat screen / weight/HIV screen]	4.09	4.61	3.92	1.17
Need for prophylactic vaccination/inoculation against bacterial disease [typhoid immunization]	3.25	1.02	3.98	.26
Special screening for bacterial/spirochetal disease [TB/PPD / took culture / premarital screening]	3.16	2.56	3.36	.76
Observation/evaluation for suspected conditions [over-the-counter meds]	2.19	2.73	2.02	1.35
Nonsickness consultation	1.43	2.05	1.23	1.66
Special screening for other conditions [blood pressure for PFT/other / HCT]	1.22	.68	1.40	.49
Special screening for mental disorder or developmental handicap [DAPA screen / substance abuse screen]	1.18	.68	1.34	.51
Normal pregnancy	.80	3.24	.00	--
Need for prophylactic vaccination/inoculation against certain viral diseases [flu shot]	.55	.68	.50	1.35

Injury/Musculoskeletal

Overall, injuries and musculoskeletal problems, including effects of external exposures (e.g., motion sickness), accounted for 27 percent of all patient visits. The monthly rate of sick call visits for injuries and musculoskeletal problems among females was 164 per 1,000 and 134 per 1,000 among males. The majority of this difference was accounted for by back problems, unspecified injuries, and motion sickness. The 19 leading injuries and musculoskeletal problems presented in Table 5 accounted for 66 percent of all sick call visits for injuries or musculoskeletal problems. The following distribution of all injuries and musculoskeletal problems, summed across specific body parts, represents an overview of the types of injuries and musculoskeletal problems which are most likely to occur aboard ship: musculoskeletal problems (e.g., back pain, muscle cramps, internal derangement of the knee) (28%), sprains/strains (17%), superficial injuries (15%), open wound (9%), burns (7%), contusions (6%), fractures (3%), foreign body in orifice (3%), and other (12%).

Health Care Provider

Aboard ships with a medical officer, the medical officer was identified as the senior provider seen in 29 percent of all patient visits recorded in the June sick call logs. This figure, however, probably does not reflect the full extent of the medical officer involvement in the remaining cases which were seen by hospital corpsmen. Across all patient visits, medical officers saw 33 percent of all female patients and 27 percent of all male patients [$\chi^2(1)=21.96$, $p<.001$]. This difference, however, was largely attributable to the fact that 59 percent of all female-specific conditions were seen by a medical officer. When female-specific conditions were excluded from the analysis, the proportion of female patients seen by a medical officer dropped to 27 percent and was no different than the proportion of males seen by a medical officer.

Although the sex of the patient was not strongly related to the type of health care provider seen, the type of diagnosis substantially affected whether the patient was seen by the medical officer or a hospital corpsman [$\chi^2(16)=596$, $p<.001$]. As shown in Figure 11, patients with presenting problems in the general areas of endocrine, nutrition or metabolic, genitourinary, health services, mental disorders, or complications of pregnancy were relatively more likely to see the medical officer, and patients with injuries, respiratory system, or infectious/parasitic disorders were more

Table 5

LEADING INJURIES AND MUSCULOSKELETAL DISORDERS

	Visits Per 1,000 Crew Per Month			Female- to-Male Ratio
	Total	Female	Male	
MUSCULOSKELETAL / CONNECTIVE TISSUE				
Other/unspecified disorder of back [back pain/spasm / OMT / LBP]	16.2	21.5	14.5	1.49
Other/unspecified disorder of joint [knee/hand/hip/wrist pain]	5.8	7.2	5.4	1.33
Internal derangement of knee [chondromalacia / CMP]	4.5	5.5	4.1	1.32
Peripheral enthesopathy/allied syndrome [spur / bursitis / tendonitis / tennis elbow]	2.7	2.7	2.6	1.04
INJURIES / MOTION SICKNESS				
Injury, other/unspecified [motor vehicle accident /soft tissue injury / musculoskeletal trauma]	7.0	10.4	5.9	1.75
Effect of other external cause [motion sickness / bug bite / electric shock]	6.3	14.0	3.7	3.73
Sprain/strain of ankle/foot [trauma]	6.3	6.5	6.3	1.03
Superficial injury of eye/adnexa [eye/corneal abrasion]	5.4	6.8	4.9	1.38
Open wound of finger(s)	4.9	5.5	4.7	1.16
Sprain/strain of other/unspecified parts of back [of neck / trauma]	4.6	5.5	4.4	1.25
Contusion of lower limb or other/unspecified sites	3.9	4.6	3.6	1.26
Foreign body on external eye	3.9	3.6	4.0	.90
Superficial injury of finger(s)	3.7	3.4	3.8	.90
Sprain/strain of knee/leg [trauma]	3.6	3.8	3.5	1.06
Burn of upper limb except wrist/hand	3.3	2.4	3.6	.66
Open wound of hand except finger(s) alone	3.0	1.4	3.5	.39
Superficial injury of other/multiple/unspecified sites	3.0	2.2	3.2	.69
Contusion of upper limb [thumb]	2.9	2.9	2.9	1.01
Sprain/strain of wrist/hand [trauma]	2.8	2.4	2.9	.82

likely to see a hospital corpsman. Table 6 presents the specific diagnoses which had the highest probability of being seen by a medical officer.

Services and Procedures

During the June data collection, the sick call log reflected whether the patient received any of the following services or procedures: pharmacy, physical examination, laboratory test, X-ray, audiogram, immunization, ECG, KOH prep/wet mount, pelvic examination, pregnancy test, gram stain/cervical culture, Pap test, or birth control

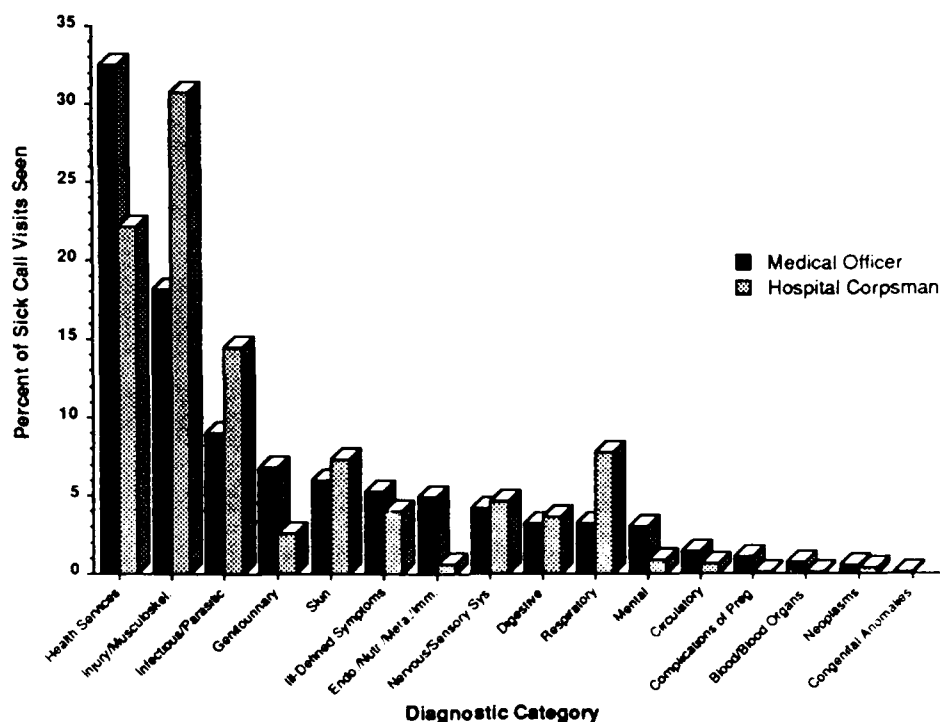


Figure 11. Distribution of Caseload for Medical Officers and for Hospital Corpsmen Aboard Ships with a Medical Officer

Table 6

**DIAGNOSES WITH THE HIGHEST PROBABILITY OF
BEING SEEN BY THE SHIPBOARD MEDICAL OFFICER**

	Percent Seen by MO	N *
Special screening for malignant neoplasms [Pap / pelvic]	95	92
Obesity/other hyperalimentation [overweight]	94	89
Migraine	83	42
Inflammatory disease of cervix, vagina, or vulva [vaginitis]	67	27
Fracture of one or more phalanges of hand	63	27
General medical examination [physical exam]	62	637
Functional digestive disorder not elsewhere classified [constipation / IBS / colonic spasm]	57	21
Essential hypertension	56	23

* Diagnoses with less than 20 patient visits were excluded.

pills. For each patient encounter, these data indicated whether or not a given service or procedure was provided (e.g., pharmacy) but did not reflect the total volume of that service (e.g., number of different prescriptions). In general, pharmacy, excluding birth control pills, laboratory tests, and physical examinations were the leading medical services and procedures provided aboard ship and accounted for 75 percent of all services and procedures.

Across the services and procedures presented in Figure 12, an average of .85 services or procedures were provided during each patient visit. Although female patients received significantly [$t(5276)=6.14$, $p<.001$] more services or procedures during each sick call visit (.93) than males (.80), this difference was due to female-specific services and procedures. An analysis of the number of services and procedures, excluding female-specific items, indicated that male patients received significantly [$t(6045)=3.2$, $p<.001$] more services or procedures per sick call visit (.80) than females (.74). This difference was largely due to the number of physical examinations received by males. Although these differences are statistically significant, the magnitude of the effect is small and of limited practical value. Female-specific services and procedures, such as pelvic examinations, Pap tests, pregnancy tests, and birth control pills, accounted for 20 percent of all services and procedures received by female patients.

Figure 13 is a plot of the female crew size and the number of female-specific services or procedures which occurred aboard the 20 ships which provided sick call log data in the month of June. The least squares regression line represents an estimate of additional female-specific services or procedures which would be required as male crew members are replaced with female crew members. Based on the number of each female-specific service or procedure performed in our sample of 2,772 female patient visits during the month of June, it is estimated that each 100 female crew members will require the following number of female-specific services or procedures per month aboard ship: 5 pelvic examinations, 3 Pap tests, 3 pregnancy tests, and 3 prescriptions for birth control pills.

Disposition and Duty Status

Subsequent to each sick call visit, the health care provider indicated the disposition of the condition (i.e., resolved, return if necessary, return visit scheduled,

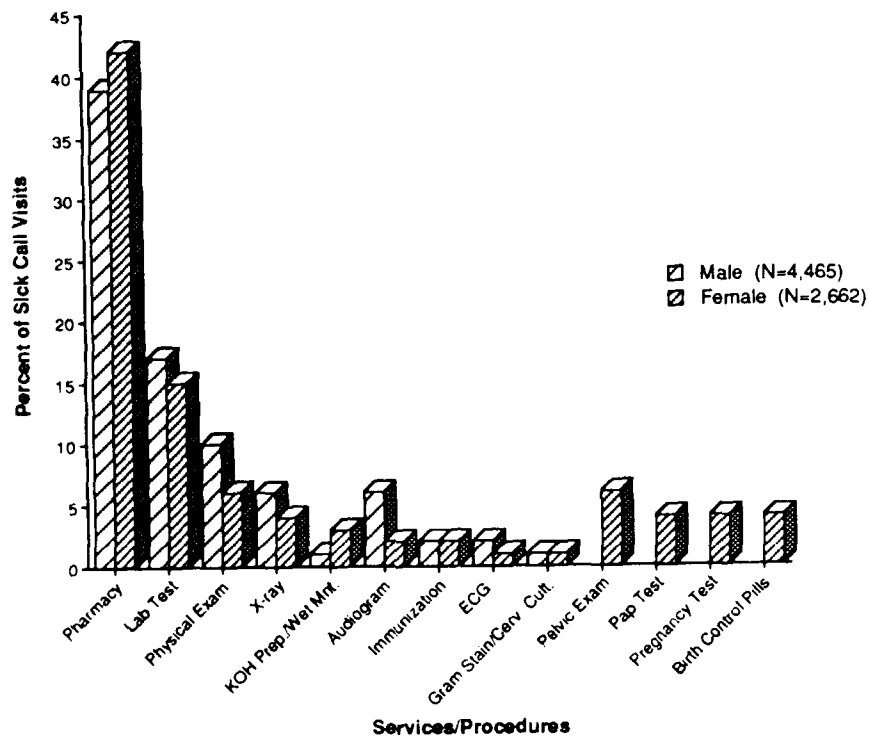


Figure 12. Percent of Sick Call Visits Which Received Specified Services

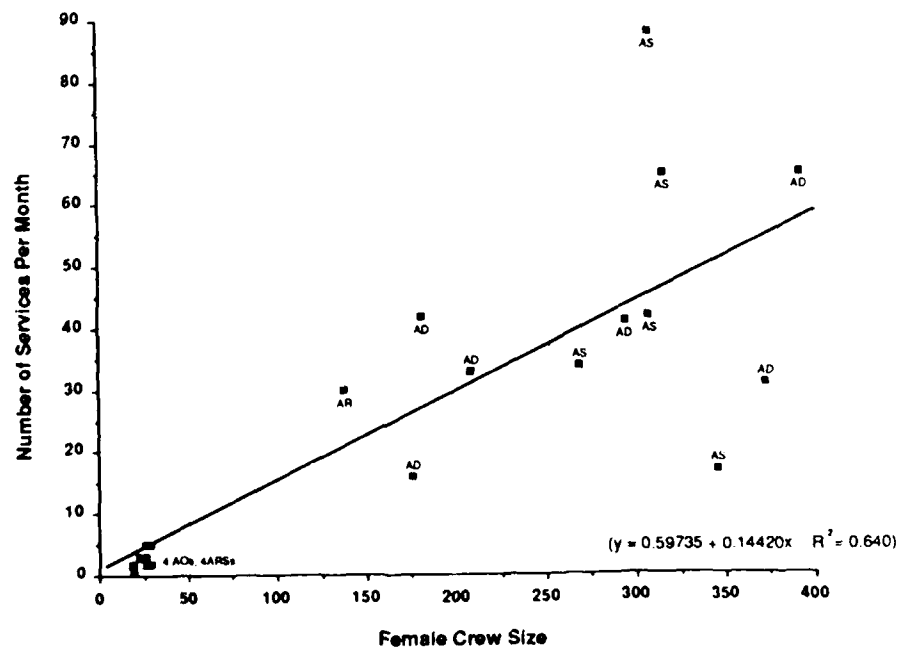


Figure 13: Projected Increases in Female-Specific Services as Male Crew is Replaced by Female Crew

or referred) and the duty status of the patient (i.e., full duty, limited duty, no duty/sick in quarters). As shown in Figure 14, the distribution of visit disposition was very similar between men and women. For the majority of patients, the condition was either resolved during the visit or they were instructed to return if necessary. Approximately six percent of the patients were referred. Although there were no overall sex differences in referrals, men and women tended to be referred for somewhat different conditions. As shown in Figure 15, men were referred somewhat more frequently than women for injuries, mental conditions, and circulatory disorders. Women, on the other hand, were referred more frequently for health services (e.g., Pap tests, pregnancy tests), infectious/parasitic diseases, genitourinary problems, nervous/sensory system disorders, and pregnancy-related conditions. Although mental problems and pregnancy-related conditions exhibited high rates of referral, sick call visits for these conditions were relatively infrequent, and the actual number of referrals was small.

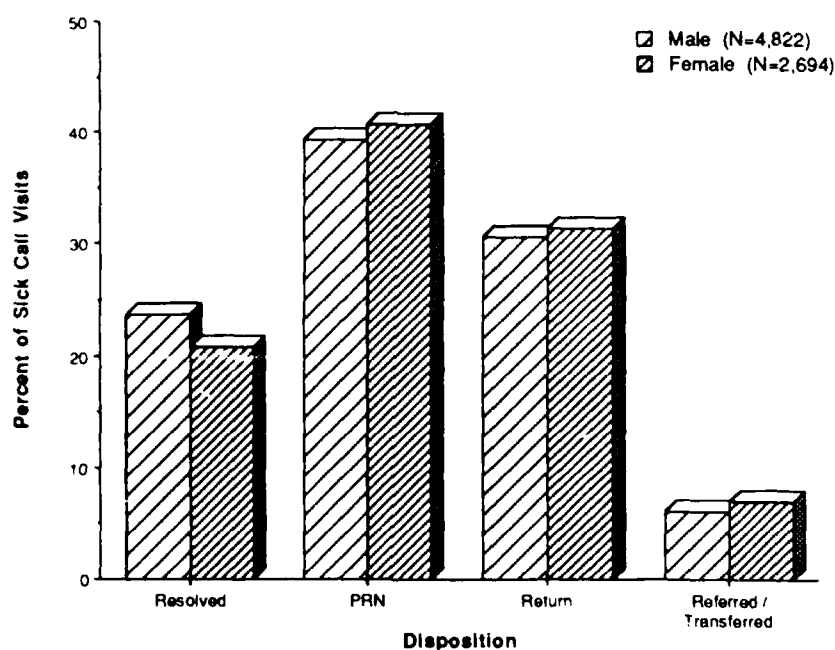


Figure 14. Disposition of Shipboard Sick Call Visits by Sex

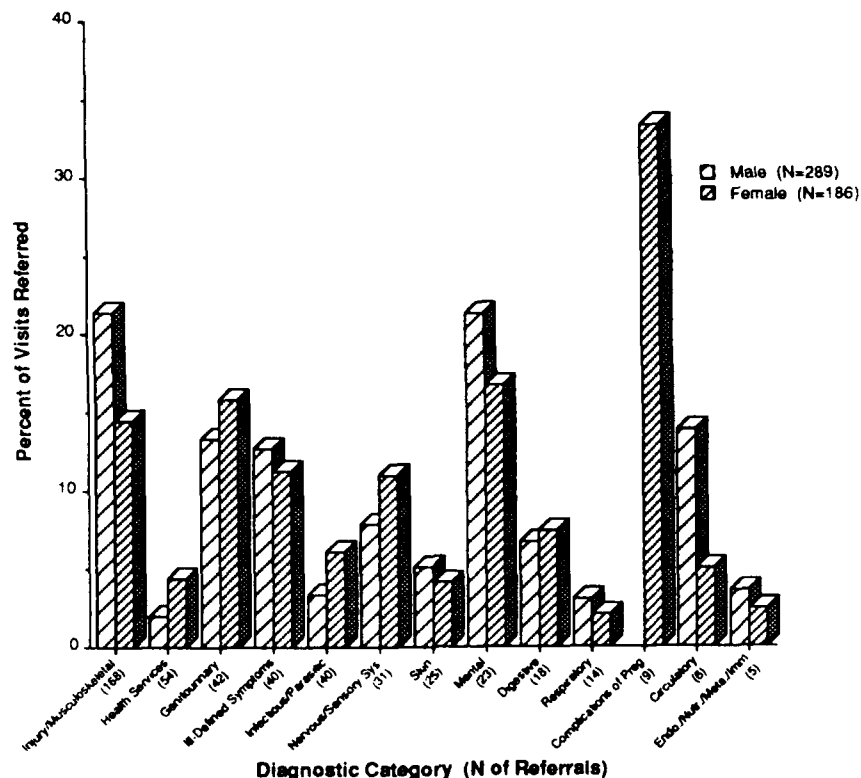


Figure 15. Percent of Sick Call Visits Referred by Diagnostic Category and Sex

During the course of the year, each ship reported the number of men and women who were evacuated for medical reasons each quarter. For any given quarter, the medical evacuation data were analyzed only if the ship was at sea for some portion of the quarter. This resulted in the analysis of medical evacuation data from an average of 2.6 quarters for each of the 20 ships. Although the medical evacuation totals which were reported included some serious medical emergencies, occasional qualifying information indicated that most of the reported cases were medical transfers of a less immediate nature (e.g., transfer for more definitive medical care from a ship at anchor to a shore-based facility in Naples, or transfer of newly pregnant women from a deployed ship). Across all 20 ships in the study, the medical evacuation/transfer rate for men was 3 per 1,000 male crew per quarter, and the rate for women was 4 per 1,000 female crew per quarter.

Health Care Provider Survey

One of the primary objectives of this study was to recommend the level of health care provider which would be required to meet the responsibilities of the senior medical department representative aboard salvage ships (ARS), oilers (AO), ammunition ships (AE), and combat stores ships (AFS) with women assigned. Based on the quarterly summary reports and the sick call log data, estimates were developed for the female health care requirements which could be anticipated aboard each of the four ship types of interest over a hypothetical six-month deployment. For each ship type, a separate estimate was made for ships with a 25 percent female crew and a 50 percent female crew. These health care projections included total sick call visits per week, number of new pregnancies, and number of female-specific sick call visits for pregnancy-related disorders, female genitourinary problems, and health services. A copy of this survey is provided in Appendix C.

Given these projections, Navy health care providers were requested to determine whether an independent duty hospital corpsman with additional training in obstetrics and gynecology, a physician's assistant, or a medical officer would be required to meet the responsibilities of the senior medical department representative aboard each of four ship types under each of two conditions of female staffing. Figure 16 shows the distribution of recommendations provided by this group of 106 health care providers. An additive combination of crew size and number of women assigned was used to locate each ship type with each female staffing level along the abscissa (horizontal axis) of the graph. The number of respondents who recommended each type of health care provider as the senior medical department representative is plotted on the ordinate (vertical axis). The horizontal line in the center of the graph identifies the level at which 50 percent of the respondents concurred on a recommendation.

A general perception of increased medical care requirements across the array of ship types is demonstrated by the negatively sloped function for recommendations supporting an independent duty hospital corpsmen, the positively sloped function supporting medical officers, and the inverted-U-shaped function supporting physician's assistants near the intersection of the other two curves. This figure demonstrates that the majority of respondents believed an independent duty hospital corpsman represented the appropriate level of medical care aboard salvage ships and an oiler with approximately 50 women assigned. As the female complement aboard

an oiler increased to 100 however, 40 percent recommended an independent duty hospital corpsman, 40 percent recommended a physician's assistant, and the remaining 20 percent recommended a medical officer. This indicates that a transition point in the recommended level of health care provider occurred aboard an oiler, and the critical parameter was 50 versus 100 women assigned. A subgroup analysis of respondents assigned to either operational units, training commands, or Navy hospitals indicated totally consistent results. Within each of these communities, more than half of the respondents advocated an independent duty hospital corpsman as the senior medical department representative aboard oilers with 50 women assigned, and less than 50 percent endorsed an independent duty hospital corpsman in that position aboard an oiler with 100 women assigned. Separate analyses of all medical officers and all independent duty hospital corpsmen, collapsed across duty assignments, yielded identical results. There were too few physician's assistants (N=9) to permit a separate analysis of that group.

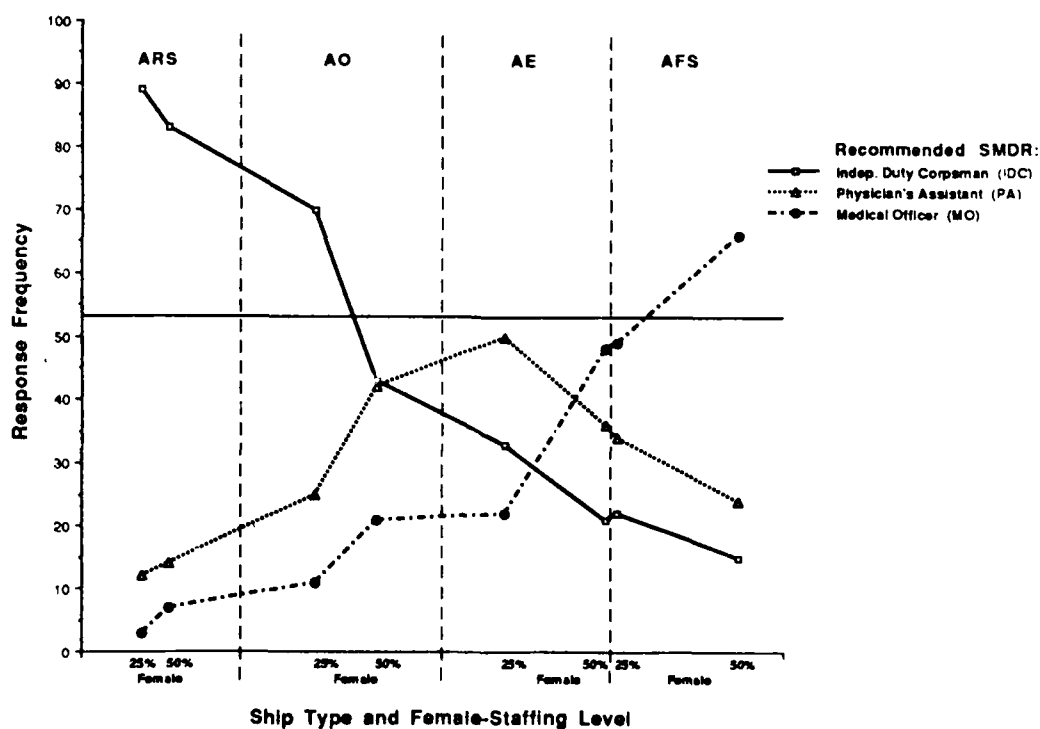


Figure 16. Recommended Senior Medical Department Representative by Ship Type and Female Staffing Level

While the data in Figure 16 also indicate the assignment of a physician's assistant aboard ammunition ships with approximately 25 percent women, the recommended level of the senior medical department representative aboard ammunition ships with 50 percent women and aboard combat stores ships with 25 percent women is less clear. The modal response, which accounted for 48 percent of the responses regarding these ships, was that a medical officer was required as the senior medical department representative. The remaining 52 percent of the respondents, however, were satisfied that a level of training below that of a medical officer would be sufficient. A subgroup analysis indicated that the majority of independent duty hospital corpsmen recommended the assignment of a medical officer to these ships; but, the majority of medical officers indicated that a physician's assistant was the appropriate level of health care provider. Within each group, the majority of respondents identified a requirement for a medical officer aboard a combat stores ship with a 50 percent female crew (i.e., 200). Therefore, the transition point between physician's assistant and medical officer was estimated to occur aboard a combat stores ship and the critical parameter was identified as 100 versus 200 women assigned.

On balance, these data suggest that all salvage ships and oilers with less than 75 women aboard should be staffed with an independent duty hospital corpsman as the senior medical department representative. A physician's assistant should assume the responsibilities of the senior medical department representative aboard oilers with more than 75 women assigned, all ammunition ships with women assigned, and combat stores ships with less than 150 women assigned. Medical officers should be assigned to combat stores ships with more than 150 women. These estimates, of course, provide only general guidelines and are not considered either definitive or rigid.

Although these recommendations are generally consistent with the individual survey responses which were received, they are slightly at variance with a consensus recommendation which was received late in the survey from the department of obstetrics and gynecology at a leading Naval hospital. In a letter report, the department head related that a group of ten staff physicians and sixteen resident physicians, after considerable deliberation, concurred that an independent duty hospital corpsman should be assigned as the senior medical representative aboard all

salvage ships and oilers, a physician's assistant should be assigned aboard ammunition ships, and a medical officer should be assigned aboard combat stores ships.

DISCUSSION

In many respects, the results of this study indicate that the shipboard processes of health care delivery for men and women are more similar than they are different. Generally speaking, male and female sick call cases are quite similar in the proportion of initial versus follow-up visits, the distribution of visits which are resolved, referred, or scheduled for additional follow-up, and the proportion of patients assigned limited duty or sick in quarters. About one half of all sick call visits for both men and women are for illnesses or disorders, about one fourth are for injuries, and the remaining one fourth are for health services, such as physical examinations, special evaluations, or contraceptive management. In addition, the rank order of the reasons for patient visits, as aggregated within 17 major diagnostic categories, is quite similar for men and women. The primary difference is that among women genitourinary disorders rank fifth and skin disorders rank ninth; among men the reverse is true.

Overall, sex differences in shipboard health care utilization are more distinguished by the quantity of patient visits than by the nature of the presenting problems. On average, women aboard ship visit sick call 1.79 times more frequently than men. This finding is consistent with previous studies in the private sector^{1,2,7} and in the military.^{4,8} Verbrugge¹ conceptualized potential explanatory factors for sex differences in health into five categories: (1) biological risks of disease, (2) acquired risks of illness and injury, (3) psychosocial aspects of symptoms and care, (4) health reporting behavior, and (5) prior health care. After an extensive review of the literature, Verbrugge¹ subscribed to the following hypotheses: (1) women have more real health problems in any time frame - daily, annual, lifetime - than men do, (2) women's attentiveness to body discomforts increases their felt-symptom experience and their evaluation of symptoms as illness, (3) men and women are similar in willingness and ability to take initial health actions, but women take more extensive care (e.g., drugs, health seeking) and more protracted care for such problems, (4) for minor health problems, women have stronger predispositions to take both initial and continued care, and (5) women are better reporters of minor problems because of both memory and willingness.

Although sex differences in shipboard health care utilization are generally more quantitative than qualitative, and most female-specific disorders are routine in nature,⁹ the majority of Navy health care providers in the present study appeared to consider the introduction of a sizable number of women aboard ship as an important determinant of the type of health care provider required. Specifically, these health care providers indicated that as the number of females aboard an oiler (AO) increased from approximately 50 to 100, a physician's assistant, rather than an independent duty hospital corpsman, would be required to meet the responsibilities of the senior medical department representative. They further reported that physician's assistants should be assigned to ammunition ships and combat stores ships with less than 150 women assigned, and that medical officers should be assigned to combat stores ships with more than 150 women aboard.

While the particular factors which influenced these decisions were reported only infrequently, a number of considerations appear probable. Many of these recommendations to assign a physician's assistant aboard ships with relatively large numbers of women may have been influenced by the positive role physician's assistants have played in the treatment of males and females in both urban and remote settings over the past 15 years. Since the introduction of physician's assistants, and other non-physician health care providers, in the United States in the late 1960s and early 1970s, a considerable body of research literature has addressed their effectiveness in primary care. Results from these studies indicate that physician's assistants are cost effective,^{10,11,12} deliver a high quality of care,^{13,14,15,16,17} and are well accepted by patients.¹⁸

This, of course, does not suggest that independent duty hospital corpsmen with appropriate training could not deliver high quality care to women. However, the fact that independent duty hospital corpsmen have not traditionally been associated with that role, and the potential uncertainty surrounding the specific nature of any proposed additional training, may have reduced the probability of recommending independent duty hospital corpsmen aboard ships with large numbers of women. Interestingly, the support for assigning a physician's assistant or a medical officer aboard those ships was strongest among the independent duty hospital corpsmen.

Considering this history, the early detection, or possible prevention, of infrequent but serious disorders such as pelvic inflammatory disease or ectopic

pregnancy may appear more consistent with the clinical training and experience of a physician's assistant. Likewise, the physician's assistant may have been viewed as a more appropriate health care provider to manage the contraceptive needs and pregnancy-related issues attendant to larger female populations. The results from this study, for example, indicate that approximately five percent of the female crew becomes pregnant each quarter. This finding appears consistent with other results which indicate that approximately 10 percent of all Navy women below the rank of E-5 are pregnant at any given time.¹⁹ Given the 20-week transfer policy for women who become pregnant while assigned aboard ship, it is estimated that five to ten percent of the females assigned to a ship will be pregnant at any given time. The importance of the detection and management of these pregnancies, as well as the associated decisions regarding appropriate tasks, working conditions, and the potential for complications, may have encouraged some respondents to recommend the assignment of physician's assistants.

Finally, the recommendation to assign a physician's assistant aboard ships with large numbers of women may have been influenced by the traditional boundaries which exist between officers and enlisted personnel. Approximately 25 percent of all female patient visits are for female-specific disorders or health services which may require the examination or treatment of the genital region. Given the close working and living conditions which exist aboard ship, the assignment of an officer as the primary health care provider may have been viewed as a measure to reduce social proximity and thereby protect the patient-provider relationship.

Of course, estimating the level of care required for a generally young and healthy Navy population aboard ship is inexact at best. Certainly one must consider the fact that, over the decades, independent duty hospital corpsmen have demonstrated a splendid and often heroic tradition of service to the fleet. It is also true that over the past five years, independent duty hospital corpsmen have successfully served as senior medical department representatives aboard U.S. Navy salvage ships which operate independently and have a small number of women assigned. However, the introduction of a relatively large number (e.g., 75) of women aboard ship, will materially affect the case load and the case mix of the medical department. The assignment of a physician's assistant to these ships would not, in our view, constitute a different or higher standard of care but rather a more effective match between the training of the health care provider and the anticipated needs of

the population. While one could argue that the advanced hospital corps school curriculum could be expanded by an additional three or four weeks to meet these requirements, this expense would be difficult to justify in view of the relatively small number of billets affected.

In addition to the assignment of physician's assistants to some ships, it is important to consider a number of strategies to minimize the female-specific medical risks associated with shipboard assignment. The management of pregnant servicewomen aboard ship, for example, represents a complex medical and operational challenge. Because early pregnancy detection is fundamental to proper medical management, it is imperative that the most sensitive and reliable pregnancy tests be made available to shipboard health care providers. Several narrative comments provided by shipboard health care providers (Appendix D) indicate a high level of false negatives with the urine human chorionic gonadotropin (HCG) test (Pregnosticon) which is currently provided in the authorized medical allowance list. Given the importance of accurate pregnancy test results, particularly in the diagnosis of female abdominal or pelvic symptoms aboard deployed units, it is recommended that the highest quality pregnancy tests be provided aboard ship.

It is also extremely important to minimize the probability of assigning a pregnant servicewoman to sea duty. A number of cases have been reported in which pregnancies have been discovered during check-in physical examinations aboard ship. In an examination of 55 records of "New Check-Ins," one medical officer aboard ship found that 19 women were never tested for pregnancy prior to transfer, 17 had a urine pregnancy test within 8 weeks of transfer, 14 were tested within 8-24 weeks of transfer, and 5 were tested at greater than 24 weeks before transfer. Another medical officer reported that a servicewoman was 31 weeks pregnant when she reported aboard. She did not know she was pregnant, and the pregnancy was discovered during a replacement physical examination. Although these cases are anecdotal, they are substantiated by a report that 13 percent of the women in ships who had to be reassigned to shore duty because of pregnancy in fiscal year 1988 were pregnant when they reported to the ship.¹⁹ These findings support current efforts to develop policy initiatives which address the transfer of pregnant servicewomen to Type 2 or 4 Unit (shipboard) duty. We would encourage the requirement for a negative pregnancy test result entry in the medical record prior to assignment to sea

duty. It is also important that this test be conducted relatively close to the detachment date.

Approximately 60 percent of the pregnancies among Navy women are unplanned.¹⁹ One method to reduce medical risks associated with pregnancies among women assigned to ships would be to reduce the incidence of unplanned pregnancies. In a study of pregnancy among women Marines during their first 12 months after recruit training, Gerrard²⁰ found that the relatively high pregnancy rate was the result of a combination of factors. Many of the women, for example, engaged in sexual intercourse relatively frequently. In addition, they did not choose effective methods of contraception, and their attitudes toward pregnancy were not sufficiently negative to motivate conscientious and consistent use of their chosen methods of birth control. A recent study, which has not yet been published, has found that about 60 percent of unplanned pregnancies among U.S. Navy women occurred because they were not using birth control methods (Thomas, personal communication). In about one-half of these cases, the women typically used an effective birth control method but were not totally consistent. Although there has been no published research on the effectiveness of educational interventions on the rate of unplanned pregnancies aboard ship, it is important that women aboard ship understand Navy policy regarding the management of pregnant servicewomen. It is also important that prior to deployment these women understand the pregnancy-related transfer policy and the potential unavailability of abortion services overseas.

In addition to the reduction of any medical risks which may be associated with pregnancy aboard ship, it is important to minimize the risk associated with other female-specific disorders. Given the seriousness of pelvic inflammatory disease aboard a deployed unit, we recommend a medical screen for chronic pelvic inflammatory disease prior to the assignment of a woman to sea duty. In addition, we recommend a Pap test at least six months prior to a major deployment. These preventive measures may reduce the probability of a serious medical condition at sea. However, in the event of a serious female-specific medical condition, all independent duty hospital corpsmen and physician's assistants should be trained to follow algorithm-based diagnostic guidelines which provide unambiguous medical evacuation decision points. We also recommend that medical officers aboard large Navy ships be trained and equipped to treat female patients who have been medically evacuated. This includes the deployment of a dilation and curettage (D & C) kit with the Fleet Surgical Team.

The prevention, as well as the recognition and treatment, of sexually transmitted diseases represents another medical issue which becomes more complex with the assignment of women aboard ship. The identification of sexually transmitted diseases which may remain asymptomatic in females, and yet may lead to serious complications, requires more sensitive laboratory and test capabilities than currently exist aboard Combat Logistics Force Ships. More sophisticated pharmacy and laboratory capabilities, such as GCN, should accompany the assignment of physician's assistants aboard these ships. The availability of these capabilities could also improve the specificity of treatment plans and reduce the probability of masking other potentially important symptoms attendant with the introduction of more general antibiotic regimens.

In conclusion, the primary objective of this study was to provide an empirical basis on which to determine important shipboard medical department staffing decisions. To this end, we have collected and assessed a large volume of shipboard medical data and have provided a series of recommendations which we believe to be consistent with those data. It is important to point out, however, that a variety of diverse attitudes and opinions exist on this subject. This diversity reflects a dynamic range of personal criteria and experience superimposed on a decision process which, like the practice of medicine, may require ample portions of both science and art.

RECOMMENDATIONS

The following recommendations are believed to be consistent with the findings of this study and are intended to encourage productive deliberations on issues of Navy medical department policy afloat.

- o Establish training, use, and certification guidelines for Physician's Assistants on independent duty.
- o Assign an Independent Duty Hospital Corpsman as the Senior Medical Department Representative (SMDR) aboard all ARSs and those AOs with less than 75 female crew members. Assign a Physician's Assistant as the SMDR aboard AOs with 75 or more female crew members, all AEs with female crew members, and AFSs with less than 150 female crew members. Assign a Medical Officer to AFSs with more than 150 female crew members.

- o Aboard ships with a Physician's Assistant assigned as the SMDR:
 - Retain an Independent Duty Hospital Corpsman (8425) or a senior Hospital Corpsman (0000 or 8424) trained in shipboard procedures (e.g., laboratory, occupational health, sanitation, administration, etc.).
 - Upgrade the Authorized Medical Allowance List (AMAL) to accommodate the diagnosis and treatment of routine female-specific problems (e.g., GCN culture, wider range of pharmacy/birth control pills, etc.). Force Medical Officers should review existing AMALs with Physician's Assistants currently serving aboard ship and implement appropriate changes.
 - Provide routine physical exams and other appropriate medical services to nested ships.
- o Train Independent Duty Hospital Corpsmen and Physician's Assistants to specific algorithm-based diagnostic guidelines for female abdominal or pelvic pain with emphasis on medical evacuation decisions.
- o Review Advanced Hospital Corps School training curriculum to ensure adequate obstetrics and gynecology emphasis for Independent Duty Hospital Corpsmen serving as SMDRs aboard ships with women assigned.
- o Assign a Physician's Assistant to support the Medical Officer aboard larger ships.
- o Equip and train Medical Officers aboard large combatants, amphibious ships, and aircraft carriers for the receipt of female medical evacuation patients.
- o Deploy a dilation and curettage kit with the Fleet Surgical Team.
- o Replace the urine human chorionic gonadotropin (HCG) pregnancy test (Pregnosticon) currently provided in the Authorized Medical Allowance List with a more sensitive and reliable test.
- o Establish the requirement for a negative pregnancy test result entry in the medical record close to the detachment date for sea duty.

- o Conduct a medical screen for chronic pelvic disease prior to the assignment of a woman to sea duty.
- o Require a Pap test within six months of a major deployment.
- o Encourage the participation of fixed treatment facilities in the development and implementation of predeployment responsible sexuality workshops for male and female crew members on topics such as sexually transmitted diseases, birth control methods, Navy pregnancy policy, and abortion laws and options overseas.

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APPENDIX A

Shipboard Health Care Provider Recommendation

The purpose of this survey is to determine the level of health care provider which would be required to meet the responsibilities of the Senior Medical Department Representative (SMDR) aboard various ship types with women assigned. The columns below represent the estimated number of total sick call visits (male and female), pregnancies, and visits for female-specific disorders aboard ships with different crew sizes and female complements during a hypothetical **6-month deployment**. Additional detail on estimated female-specific disorders is presented on the reverse side. **At the bottom of each column**, please indicate the level of health care provider which you feel would be required to meet the responsibilities of the SMDR for each ship type below. Please limit your choices to:

- an independent duty hospital corpsman with some additional OB/GYN training (IDC)
- a physician's assistant (PA)
- a medical officer (MO)

(Additional IDC training might involve 2-3 weeks didactic instruction and clinical rotation in OB/GYN during Advanced Hospital Corps School. An overview of the new PA training program is provided on reverse side.) Comments regarding your key decision factor(s) are invited.

SHIP TYPE: CREW SIZE:	SALVAGE (ARS) 89		OILER (AO) 209		AMMUN. (AE) 338		STORES (AFS) 414	
FEMALES ASSIGNED:	22	45	52	104	84	169	103	207
Total Crew (male & fem.)								
Sick Call Visits / Week:	12	14	28	32	45	52	55	64
New Pregnancies in 6-Month Deployment:	2	4	5	10	8	16	10	20
Visits in 6-Month Deployment for Preg.-Related Disorder: <i>(Diagnostic details on reverse side.)</i>	1	3	3	6	5	10	6	12
Female Genitourinary: <i>(Diagnostic details on reverse side.)</i>	5	11	13	26	21	42	26	51
Female Health Svcs: <i>(Diagnostic details on reverse side.)</i>	10	21	24	48	40	79	48	96

Recommended SMDR:	_____	_____	_____	_____	_____	_____	_____	_____
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(Enter IDC, PA, or MO **for each column)**

Your Command: _____

Your Title *(Rate/Rank, Position/Specialty)*: _____

Return Instructions: *(choose one)*

1. Telefax this page to: "Attention: Dr. Nice" Telefax commercial #: (619)553-9389; autovon #: 553-9389.
2. Telephone results of this page to: Ms. Susan Hilton, commercial #: (619)553-8462; autovon #: 553-8462.
3. Mail this page to: Dr. Nice, Naval Health Research Center, P.O. Box 85122, San Diego, CA 92138-9174

ESTIMATED TOTAL NUMBER OF FEMALE-SPECIFIC PATIENT VISITS DURING A 6-MONTH DEPLOYMENT

	Ship Type:		Salvage		Oiler		Ammunition		Combat Store	
	Females Assigned:		22	45	52	104	84	169	103	207
PREGNANCY-RELATED DISORDERS/CONDITIONS										
Abnormal product of conception			<.1	<.1	.1	.1	.1	.2	.1	.2
Ectopic pregnancy			<.1	.1	.1	.2	.2	.3	.2	.4
Spontaneous abortion			.2	.5	.5	1.1	.9	1.7	1.1	2.1
Unspecified abortion			.1	.2	.2	.4	.4	.7	.4	.9
Hemorrhage in early pregnancy			.1	.2	.2	.4	.4	.7	.4	.9
Antepartum hemorrhage / abruptio placentae / placenta previa [e.g., bleeding pregnancy]			.1	.1	.2	.3	.3	.5	.3	.6
Excessive vomiting in pregnancy			<.1	<.1	.1	.1	.1	.2	.1	.2
Early/threatened labor			<.1	.1	.1	.2	.2	.3	.2	.4
Delivery in a completely normal case			<.1	<.1	.1	.1	.1	.2	.1	.2
Pregnancy-related anemia			<.1	<.1	.1	.1	.1	.2	.1	.2
Pregnancy-related cystitis			<.1	<.1	.1	.1	.1	.2	.1	.2
Other current condition in mother classifiable elsewhere but complicating pregnancy/childbirth/the puerperium			.1	.1	.2	.3	.3	.5	.3	.6
Other complication of pregnancy, not elsewhere classified			.1	.2	.3	.5	.4	.9	.5	1.1
Pregnancy-related pain/symptoms of female genital organs			.1	.1	.2	.3	.3	.5	.3	.6
Other pregnancy-related symptoms [e.g., morning sickness]			.3	.7	.8	1.6	1.3	2.6	1.6	3.2
Total:			1.3	2.6	3.0	6.0	4.9	9.7	6.0	11.9
GENITOURINARY SYSTEM DISORDERS										
Malignant neoplasm of female breast or genital organ			.1	.1	.1	.3	.2	.5	.3	.6
Benign neoplasm of breast			<.1	<.1	.1	.1	.1	.2	.1	.2
Benign mammary dysplasias			.1	.3	.3	.6	.5	1.0	.6	1.3
Other disorders of breast [e.g., breast pain/tender]			.1	.2	.2	.4	.4	.7	.4	.9
Noninflamm. disorder of ovary/fallopian tube/broad ligament [e.g., ovarian cyst]			.2	.4	.4	.9	.7	1.4	.9	1.7
Noninflammatory disorder of cervix			<.1	<.1	.1	.1	.1	.2	.1	.2
Noninflammatory disorder of vagina			<.1	.1	.1	.2	.2	.3	.2	.4
Inflammatory disease of ovary / fallopian tube / pelvic cellular tissue / peritoneum			<.1	.1	.1	.2	.2	.3	.2	.4
Inflamm. disease of cervix/vagina/vulva [e.g., vaginitis]			1.1	2.3	2.6	5.2	4.3	8.5	5.2	10.4
Endometriosis			.2	.4	.4	.9	.7	1.4	.9	1.7
Pain/symptoms associated w female genital organs [e.g., PMS / menstrual cramps]			1.8	3.9	4.4	8.7	7.2	14.3	8.7	17.5
Disorder of menstruation/abnormal bleeding from female genital tract [e.g., amenorrhea/dysmenorrhea]			.7	1.5	1.6	3.3	2.7	5.4	3.3	6.6
Other disorders of female genital organs [e.g., vaginal rash/discharge]			.9	2.0	2.2	4.5	3.7	7.3	4.5	8.9
Infertility, female			<.1	<.1	.1	.1	.1	.2	.1	.2
Total:			5.4	11.3	12.8	25.5	21.1	41.7	25.5	51.0
HEALTH SERVICES										
Contraceptive management [e.g., birth-control-pill refill]			3.0	6.2	7.0	14.1	11.6	23.0	14.1	28.1
Pregnancy-related exam or evaluation			.1	.3	.3	.6	.5	1.0	.6	1.3
Special screening for malignant neoplasms [e.g., Pap test / pelvic exam]			4.1	8.6	9.7	19.4	16.0	31.7	19.4	38.7
Pregnancy-related special screening for other conditions [e.g., pregnancy test/HCG]			2.5	5.3	6.0	12.0	9.9	19.7	12.0	24.1
Normal pregnancy			.4	.9	1.0	2.0	1.7	3.3	2.0	4.0
Pregnancy-related encounters for administrative purposes			<.1	<.1	.1	.1	.1	.2	.1	.2
Total:			10.2	21.3	24.1	48.2	39.9	78.8	48.2	96.4

OVERVIEW OF P.A. TRAINING PROGRAM

Program duration: 24 months (12 months didactic + 12 months clinical)

Topics included in program:

Allergy/Immunology	Gastroenterology	*Ophthalmology	Radiology
Cardiology	Hematology	*Outpatient Medicine	Rheumatology
*Dermatology	Infectious Disease	*Orthopedics	*Substance Abuse
EKG	*Internal Medicine	Pathology	*Surgery
*Emergency Medicine	Nephrology	*Pediatrics	Urology
Endocrinology	Neurology	*Psychiatry	
*ENT	*Ob-Gyn	Pulmonology	

* Includes clinical rotation

APPENDIX B

VISITS RATES FOR ALL DIAGNOSES FROM SHIPBOARD SICK CALL LOGS
(N=12,542)

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
1	INFECTIOUS OR PARASITIC DISEASES (001-139) @	58.8	83.6	50.7	1.65
002	Typhoid/paratyphoid fevers	.04	.17	.00	--
005	Other food poisoning (bacterial)	2.45	2.22	2.52	.88
008	Intestinal infections from other organisms [viral gastroenteritis] #	3.42	4.78	2.97	1.61
034	Streptococcal sore throat & scarlatina [strep]	11.85	19.11	9.47	2.02
037	Tetanus	.04	.00	.06	--
041	Bacterial infection of unspecified site	.51	.51	.50	1.01
052	Chicken pox [varicella]	.25	.51	.17	3.04
053	Herpes zoster	.17	.17	.17	1.01
054	Herpes simplex [cold sores]	1.48	1.88	1.34	1.40
056	Rubella	.04	.00	.06	--
070	Viral hepatitis	.30	.00	.39	--
072	Mumps	.04	.17	.00	--
075	Infectious mononucleosis [Epstein Barr Virus]	.21	.51	.11	4.57
076	Trachoma	.04	.00	.06	--
077	Other diseases of conjunctiva due to viruses/Chlamydiae	.76	1.71	.45	3.81
078	Other disease due to viruses/Chlamydiae [warts]	7.17	8.53	6.72	1.27
079	Viral infection of unspecified site [viral syndrome / general malaise]	10.46	15.86	8.68	1.83
091	Early syphilis, symptomatic [condyloma]	.59	1.36	.34	4.06
097	Other/unspecified syphilis	.08	.00	.11	--
098	Gonococcal infections	1.86	1.02	2.13	.48
099	Other venereal diseases [STD / NSU / NGU]	4.98	2.90	5.66	.51
110	Dermatophytosis [athlete's foot / tinea pedis/corporis / jock itch]	4.01	3.24	4.26	.76
111	Dermatomycosis, other/unspecified [tinea versicolor]	1.77	.85	2.07	.41
112	Candidiasis [moniliasis / yeast infection / monilia vag.]	4.09	14.16	.78	18.05
117	Other mycoses [fungal infection]	.30	.34	.28	1.22
124	Trichinosis	.08	.17	.06	3.04
127	Other intestinal helminthiasis	.04	.17	.00	--
131	Trichomoniasis	.51	1.71	.11	15.22
132	Pediculosis/phthirus infestation [pubic/crab lice]	.84	1.02	.78	1.30
133	Acariasis [scabies]	.21	.34	.17	2.03
136	Other/unspecified infectious/parasitic diseases	.21	.17	.22	.76
2	NEOPLASMS (140-239)	2.5	4.8	1.8	2.66
173	Other malignant neoplasm of skin	.04	.00	.06	--
202	Other malignant neoplasm of lymphoid/histiocytic tissue	.08	.34	.00	--
213	Benign neoplasm of bone/articular cartilage	.04	.17	.00	--
214	Lipoma	.55	.17	.67	.25
216	Benign neoplasm of skin	.17	.17	.17	1.01
217	Benign neoplasm of breast	.04	.17	.00	--
228	Hemangioma/lymphangioma, any site	.08	.34	.00	--
229	Benign neoplasm of other/unspecified sites	.08	.17	.06	3.04
239	Neoplasm of unspecified nature [mole / leiomyoma]	1.43	3.24	.84	3.86

ICD-9 *		Visits/1,000/Month			Female
Code	ICD-9 Code Description	Total	Female	Male	-Male Ratio
3 ENDOCRINE/NUTRITIONAL/METABOLIC/ IMMUNITY DISORDERS (240-279)					
		7.5	8.4	7.2	1.16
242	Thyrotoxicosis with or without goiter	.08	.00	.11	--
243	Congenital hypothyroidism	.04	.00	.06	--
246	Other disorders of thyroid	.08	.17	.06	3.04
250	Diabetes mellitus	.25	.34	.22	1.52
251	Other disorders of pancreatic internal secretion	.04	.17	.00	--
253	Disorder of the pituitary gland/its hypothalamic control	.04	.17	.00	--
259	Other endocrine disorders	.42	.34	.45	.76
269	Other nutritional deficiencies	.17	.68	.00	--
272	Disorders of lipid metabolism [cholesterolemia]	.17	.00	.22	--
274	Gout	.13	.00	.17	--
276	Disorders of fluid/electrolyte/acid-base balance [dehydration]	1.22	2.22	.90	2.47
278	Obesity/other hyperalimentation [overweight]	4.85	4.26	5.04	.85
4 DISEASE OF THE BLOOD OR BLOOD-FORMING ORGANS (280-289)					
		1.0	1.5	.8	1.96
280	Iron deficiency anemias	.04	.17	.00	--
281	Other deficiency anemias	.04	.00	.06	--
282	Hereditary hemolytic anemias	.42	.00	.56	--
285	Other/unspecified anemias	.30	1.02	.06	18.27
285P	Other/unspecified anemias, pregnancy-related	.04	.17	.00	--
289	Other diseases of blood/blood-forming organs	.13	.17	.11	1.52
5 MENTAL DISORDERS (290-319)					
		8.0	11.8	6.7	1.75
296	Affective psychoses	.17	.17	.17	1.01
300	Neurotic disorder [phobia / panic attack / anxiety / depression / Briquet syndrome]	.34	.34	.34	1.01
301	Personality disorders	.51	.68	.45	1.52
302	Sexual deviations/disorders [premature ejaculation]	.04	.00	.06	--
303	Alcohol dependence syndrome [Antabuse reaction]	.89	.51	1.01	.51
304	Drug dependence	.25	.17	.28	.61
305	Nondependent abuse of drugs [hangover]	.25	.17	.28	.61
306	Physiological malfunction arising from mental factor	.08	.17	.06	3.04
307	Special symptom/syndrome not elsewhere classified [psych. counseling /tension HA /tick /sleep walking]	3.59	6.65	2.58	2.58
308	Acute reaction to stress	.46	1.36	.17	8.12
309	Adjustment reaction [situational depression]	.63	1.19	.45	2.66
311	Depressive disorder not elsewhere classified [suicide gesture/attempt]	.59	.34	.67	.51
312	Disturbance of conduct, not elsewhere classified	.17	.00	.22	--
6 DISEASES OF THE NERVOUS SYSTEM OR SENSE ORGANS (320-389)					
		22.9	37.7	18.1	2.08
344	Other paralytic syndromes	.04	.00	.06	--
346	Migraine	2.28	6.65	.84	7.92
347	Cataplexy or narcolepsy	.04	.00	.06	--
349	Other/unspecified disorders of the nervous system	.25	.85	.06	15.22
351	Facial nerve disorders	.04	.00	.06	--

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
353	Nerve root or plexus disorders	.04	.17	.00	--
354	Mononeuritis of upper limb/mononeuritis multiplex [pinched nerve in arm]	.08	.00	.11	--
355	Mononeuritis of lower limb	.13	.34	.06	6.09
362	Other retinal disorders	.04	.17	.00	--
364	Disorders of iris/ciliary body [iritis]	.30	.85	.11	7.61
367	Disorders of refraction or accommodation	.04	.00	.06	--
368	Visual disturbances [photophobia]	.13	.00	.17	--
369	Blindness/low vision	.04	.17	.00	--
370	Keratitis	.08	.00	.11	--
371	Corneal opacity/other disorders of cornea	.08	.34	.00	--
372	Disorders of conjunctiva [conjunctivitis]	3.12	5.29	2.41	2.19
373	Inflammation of eyelids [stye / blepharitis]	1.05	1.71	.84	2.03
374	Other disorders of eyelids	.08	.00	.11	--
378	Strabismus or other disorder of binocular eye movement [lazy eye]	.08	.00	.11	--
379	Other disorders of eye	1.90	2.22	1.79	1.24
380	Disorders of external ear [otitis externa / cerumen / ear flush / abscess]	5.53	8.02	4.71	1.70
381	Nonsuppurative otitis media or Eustachian tube disorder	1.18	2.22	.84	2.64
382	Suppurative/unspecified otitis media	1.31	.85	1.46	.59
384	Other disorder of tympanic membrane [TM perforation]	.34	.34	.34	1.01
385	Other disorder of middle ear or mastoid	.25	.34	.22	1.52
386	Vertiginous syndrome or other disorder of vestibular system [dizzy / vertigo]	1.05	2.90	.45	6.47
388	Other disorders of ear [ear pain]	3.29	4.09	3.03	1.35
389	Deafness	.13	.17	.11	1.52
7	DISEASES OF CIRCULATORY SYSTEM (390-459)	3.8	4.3	3.6	1.19
390	Rheumatic fever without mention of heart involvement	.08	.00	.11	--
401	Essential hypertension	1.27	1.36	1.23	1.11
410	Acute myocardial infarction	.04	.00	.06	--
443	Other peripheral vascular disease	.04	.17	.00	--
451	Phlebitis or thrombophlebitis	.34	1.19	.06	21.31
453	Other venous embolism or thrombosis	.04	.00	.06	--
454	Varicose veins of lower extremities	.08	.00	.11	--
455	Hemorrhoids	1.56	.68	1.85	.37
457	Noninfective disorders of lymphatic channels	.13	.17	.11	1.52
458	Hypotension	.08	.34	.00	--
459	Other diseases of circulatory system	.08	.34	.00	--
8	DISEASES OF RESPIRATORY SYSTEM (460-519)	49.6	72.5	42.1	1.72
460	Acute nasopharyngitis (common cold) [coryza]	3.80	6.14	3.03	2.03
461	Acute sinusitis	5.02	8.53	3.87	2.21
462	Acute pharyngitis [sore throat / rule-out strep]	6.66	11.43	5.10	2.24
463	Acute tonsillitis	.84	1.02	.78	1.30
464	Acute laryngitis/tracheitis	.38	.85	.22	3.81
465	Acute upper respiratory infection of multiple or unspecified sites [URI]	24.55	33.44	21.63	1.55
466	Acute bronchitis/bronchiolitis	1.69	2.56	1.40	1.83

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
471	Nasal polyps	.04	.00	.06	--
472	Chronic pharyngitis/nasopharyngitis	.30	.34	.28	1.22
473	Chronic sinusitis [post nasal drip]	.59	1.02	.45	2.28
474	Chronic disease of tonsils or adenoids	.13	.51	.00	--
475	Peritonsillar abscess	.08	.00	.11	--
477	Allergic rhinitis [allergies / hay fever]	1.18	1.02	1.23	.83
478	Other diseases of upper respiratory tract [sinus congestion]	1.56	2.22	1.34	1.65
482	Other bacterial pneumonia	.04	.17	.00	--
483	Pneumonia due to other specified organism	.08	.17	.06	3.04
485	Bronchopneumonia, organism unspecified	.04	.00	.06	--
486	Pneumonia, organism unspecified	.42	.34	.45	.76
487	Influenza	.67	1.02	.56	1.83
490	Bronchitis, not specified as acute or chronic	.67	1.36	.45	3.04
491	Chronic bronchitis	.17	.00	.22	--
493	Asthma	.17	.17	.17	1.01
496	Chronic airways obstruction, not elsewhere classified	.08	.00	.11	--
508	Respiratory conditions due to other/unspecified external agents	.04	.00	.06	--
511	Pleurisy	.13	.00	.17	--
514	Pulmonary congestion or hypostasis [chest congestion]	.17	.00	.22	--
518	Other disease of lung	.04	.00	.06	--
519	Other disease of respiratory system [bronchial congestion]	.04	.17	.00	--
9	DISEASES OF THE DIGESTIVE SYSTEM (520-579)	18.0	28.1	14.7	1.92
522	Diseases of pulp or periapical tissues	.08	.00	.11	--
523	Gingival or periodontal diseases	.04	.00	.06	--
524	Dentofacial anomalies, including malocclusion	.04	.00	.06	--
525	Other disease/condition of teeth/supporting structures [toothache/chipped tooth]	.34	.34	.34	1.01
526	Diseases of the jaw	.04	.17	.00	--
527	Diseases of the salivary glands	.08	.17	.06	3.04
528	Diseases of the oral soft tissues, excluding lesions specific for gingiva/tongue	.17	.00	.22	--
529	Diseases/other conditions of the tongue	.04	.00	.06	--
530	Diseases of esophagus	.42	1.02	.22	4.57
531	Gastric ulcer	.13	.17	.11	1.52
533	Peptic ulcer, site unspecified	.04	.00	.06	--
535	Gastritis/duodenitis	4.85	8.87	3.53	2.51
536	Disorders of function of stomach [stomach pain / indigestion / acid stomach]	1.10	1.71	.90	1.90
537	Other disorders of stomach/duodenum	.46	1.02	.28	3.65
541	Appendicitis, unqualified	.08	.00	.11	--
550	Inguinal hernia	.38	.17	.45	.38
553	Other hernia of abdominal cavity without mention of obstruction gangrene	.30	.00	.39	--
558	Other noninfective gastroenteritis/colitis [diarrhea]	7.04	10.75	5.83	1.84
564	Functional digestive disorder not elsewhere classified [constipation/IBS/colonic spasm]	1.39	2.05	1.18	1.74
565	Anal fissure/fistula	.17	.34	.11	3.04

ICD-9 *		Visits/1,000/Month			Female
Code	ICD-9 Code Description	Total	Female	Male	-Male Ratio
566	Abscess of anal/rectal region	.04	.17	.00	--
569	Other disorders of intestine	.17	.34	.11	3.04
573	Other disorders of liver [hepatitis]	.21	.17	.22	.76
574	Cholelithiasis	.04	.00	.06	--
575	Other disorders of gallbladder	.13	.34	.06	6.09
578	Gastrointestinal hemorrhage [hematochezia/blood in stool]	.21	.34	.17	2.03
10 DISEASES OF THE GENITOURINARY SYSTEM					
	(580-629)	19.6	65.2	4.7	14.01
590	Infections of kidney	.21	.68	.06	12.18
592	Calculus of kidney/ureter [kidney stone]	.55	1.02	.39	2.61
594	Calculus of lower urinary tract	.04	.00	.06	--
595	Cystitis	.38	1.54	.00	--
595P	Cystitis, pregnancy-related	.04	.17	.00	--
597	Urethritis, not sexually transmitted, or urethral syndrome	.17	.00	.22	--
598	Urethral stricture	.08	.17	.06	3.04
599	Other disorders of urethra/urinary tract [UTI]	6.12	20.81	1.29	16.15
601	Inflammatory diseases of prostate	.30	.00	.39	--
603	Hydrocele	.04	.00	.06	--
604	Orchitis/epididymitis	.67	.00	.90	--
606	Infertility, male	.04	.00	.06	--
607	Disorders of penis	.13	.00	.17	--
608	Other disorders of male genital organs	.76	.00	1.01	--
610	Benign mammary dysplasias	.25	1.02	.00	--
611	Other disorders of breast [breast pain/tender]	.17	.68	.00	--
614	Inflammatory disease ovary/fallopian tube/pelvic cellular tissue/peritoneum	.08	.34	.00	--
616	Inflammatory disease of cervix/vagina/vulva [vaginitis]	2.07	8.36	.00	--
617	Endometriosis	.34	1.36	.00	--
620	Noninflammatory disorder of ovary/fallopian tube/broad ligament [ovarian cyst]	.34	1.36	.00	--
622	Noninflammatory disorders of cervix	.04	.17	.00	--
623	Noninflammatory disorders of vagina	.08	.34	.00	--
625	Pain/symptoms associated with female genital organs [PMS / menstrual cramps]	3.46	13.99	.00	--
625P	Pain/symptoms associated with female genital organs [pregnancy-related]	.13	.51	.00	--
626	Disorder of menstruation/abnormal bleeding from female genital tract [amenorrhea/dysmenorrhea]	1.31	5.29	.00	--
628	Infertility, female	.04	.17	.00	--
629	Other disorders of female genital organs [vaginal rash / discharge]	1.77	7.16	.00	--
11 COMPLICATIONS OF PREGNANCY, CHILDBIRTH, OR THE PUERPERIUM (630-676)					
		1.5	6.1	.0	--
631	Other abnormal product of conception	.04	.17	.00	--
633	Ectopic pregnancy	.08	.34	.00	--
634	Spontaneous abortion	.42	1.71	.00	--
637	Unspecified abortion	.17	.68	.00	--
640	Hemorrhage in early pregnancy	.17	.68	.00	--

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
641	Antepartum hemorrhage, abruptio placentae, or placenta previa [bleeding pregnancy]	.13	.51	.00	--
643	Excessive vomiting in pregnancy	.04	.17	.00	--
644	Early/threatened labor	.08	.34	.00	--
646	Other pregnancy complication not elsewhere classified	.21	.85	.00	--
648	Other conditions in mother classifiable elsewhere, complicating pregnancy/childbirth/the puerperium	.13	.51	.00	--
650	Delivery in a completely normal case	.04	.17	.00	--
12 DISEASES OF THE SKIN OR SUBCUTANEOUS TISSUE (680-709)		35.3	36.2	35.0	1.03
680	Carbuncle/furuncle	.84	1.19	.73	1.64
681	Cellulitis/abscess of finger/toe [paronychia]	2.02	2.05	2.02	1.01
682	Other cellulitis/abscess	1.64	1.71	1.62	1.05
684	Impetigo	.17	.34	.11	3.04
685	Pilonidal cyst	.42	.34	.45	.76
686	Other local infections of skin/subcutaneous tissue [cyst]	2.91	2.05	3.19	.64
690	Erythematous squamous dermatosis [dandruff]	.04	.00	.06	--
691	Atopic dermatitis/related conditions	1.14	1.71	.95	1.79
692	Contact dermatitis/other eczema [sunburn / poison ivy]	5.74	9.04	4.65	1.94
695	Erythematous conditions	.17	.68	.00	--
696	Psoriasis/similar disorders	.30	.17	.34	.51
697	Lichen	.04	.00	.06	--
698	Pruritus/related conditions	.21	.51	.11	4.57
700	Corns/callosities	1.56	3.92	.78	5.00
701	Other hypertrophic/atrophic conditions of skin	.21	.51	.11	4.57
702	Other dermatoses	.17	.00	.22	--
703	Diseases of nail [ingrown toenail]	4.34	3.41	4.65	.73
704	Diseases of hair/hair follicles [ingrown hair / PFB/folliculitis / hair loss]	6.24	1.02	7.96	.13
705	Disorders of sweat gland [heat rash]	.80	.68	.84	.81
706	Diseases of sebaceous glands [sebaceous cyst / ear cyst / acne]	4.60	5.29	4.37	1.21
708	Urticaria [hives]	.46	.34	.50	.68
709	Other disorders of skin/subcutaneous tissue [blisters / cracked skin]	1.22	1.19	1.23	.97
13 DISEASES OF THE MUSCULOSKELETAL SYSTEM OR CONNECTIVE TISSUE (710-739)		38.5	48.4	35.2	1.37
710	Diffuse diseases of connective tissue	.04	.17	.00	--
714	Rheumatoid arthritis or other inflammatory polyarthropathies	.08	.17	.06	3.04
715	Osteoarthritis/allied disorders [arthritis]	.63	.68	.62	1.11
716	Other/unspecified arthropathies	.13	.00	.17	--
717	Internal derangement of knee [chondromalacia / CMP]	4.47	5.46	4.15	1.32
718	Other derangement of joint	.38	.68	.28	2.44
719	Other/unspecified disorders of joint [knee/hand/hip/wrist pain]	5.82	7.16	5.38	1.33
720	Ankylosing spondylitis or other inflammatory spondylopathies	.04	.00	.06	--

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
722	Intervertebral disk disorders	.13	.00	.17	--
723	Other disorders of cervical region [neck pain]	.89	1.19	.78	1.52
724	Other/unspecified disorders of back [back pain/spasm / OMT / LBP]	16.20	21.49	14.46	1.49
726	Peripheral enthesopathy/allied syndrome [spur / bursitis / tendonitis / tennis elbow]	2.66	2.73	2.63	1.04
727	Other disorder of synovium/tendon/bursa [ganglion cyst]	1.27	1.88	1.06	1.76
728	Disorders of muscle/ligament/fascia [muscle spasm]	1.31	1.54	1.23	1.25
729	Other disorders of soft tissues [muscle cramps]	2.32	3.58	1.91	1.88
732	Osteochondropathies	.04	.00	.06	--
733	Other disorders of bone/cartilage [costochondritis]	1.56	1.02	1.74	.59
734	Flat foot [pes planus / flat feet]	.25	.17	.28	.61
735	Acquired deformities of toe	.04	.17	.00	--
737	Curvature of spine	.13	.34	.06	6.09
738	Other acquired deformity	.13	.00	.17	--
14	CONGENITAL ABNORMALITIES (740-759)	.4	.9	.2	3.81
740	Anencephalus/similar anomalies	.04	.17	.00	--
742	Other congenital anomalies of nervous system	.08	.17	.06	3.04
751	Other congenital anomalies of digestive system	.04	.00	.06	--
752	Congenital anomalies of genital organs	.04	.17	.00	--
753	Congenital anomalies of urinary system	.04	.17	.00	--
757	Congenital anomalies of the integument	.04	.17	.00	--
759	Other/unspecified congenital anomalies	.08	.00	.11	--
15	CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD (760-779)	.0	.0	.0	--
16	SYMPTOMS, SIGNS OR ILL-DEFINED CONDITIONS (780-799)	24.2	46.6	16.9	2.76
780	General symptoms [fainted / syncope / high temperature / fatigue / insomnia]	3.25	6.65	2.13	3.12
781	Symptoms involving nervous/musculoskeletal system [heat treatment / spinal manipulation]	1.18	1.19	1.18	1.01
782	Symptoms involving skin/other integumentary tissue [rash / numbness / edema]	4.93	8.02	3.92	2.04
782P	Symptoms involving skin/other integumentary tissue, pregnancy-related	.04	.17	.00	--
783	Symptoms concerning nutrition/metabolism/development	.30	.34	.28	1.22
784	Symptoms involving head/neck [nosebleed / epistaxis / headache]	3.63	6.14	2.80	2.19
785	Symptoms involving cardiovascular system	.84	1.19	.73	1.64
786	Symptom involving respiratory system or other chest symptom [hemoptysis / SOB / cough]	2.32	3.92	1.79	2.19
786P	Symptom involving respiratory system or other chest symptom, pregnancy-related	.04	.17	.00	--
787	Symptoms involving digestive system [vomiting/nausea]	2.32	5.63	1.23	4.57
787P	Symptoms involving digestive system, pregnancy-related [morning sickness]	.38	1.54	.00	--
788	Symptoms involving urinary system	.67	1.19	.50	2.37

ICD-9 *	ICD-9 Code	Description	Visits/1,000/Month			Female
			Total	Female	Male	-Male Ratio
788P		Symptoms involving urinary system [pregnancy-related]	.04	.17	.00	--
789		Other symptoms involving abdomen/pelvis [abdominal/ flank pain / cramps]	4.05	9.72	2.19	4.45
789P		Other symptoms involving abdomen/pelvis, pregnancy- related	.13	.51	.00	--
790		Nonspecific findings on examination of blood	.04	.00	.06	--
792		Nonspecific abnormal finding in other body substances	.04	.00	.06	--
17 INJURY OR POISONING (800-999)			102.6	115.1	98.5	1.17
802		Fracture of face bones	.13	.00	.17	--
807		Fracture of rib(s), sternum, larynx, or trachea	.04	.00	.06	--
810		Fracture of clavicle	.13	.00	.17	--
812		Fracture of humerus	.08	.00	.11	--
813		Fracture of radius or ulna	.04	.00	.06	--
814		Fracture of carpal bone(s) [wrist fracture]	.34	.17	.39	.43
815		Fracture of metacarpal bone(s)	.38	.34	.39	.87
816		Fracture of one or more phalanges of hand	1.64	2.39	1.40	1.70
817		Multiple fractures of hand bones	.08	.00	.11	--
818		Ill-defined fractures of upper limb	.17	.00	.22	--
823		Fracture of tibia/fibula	.04	.17	.00	--
824		Fracture of ankle	.08	.00	.11	--
825		Fracture of one or more tarsal/metatarsal bones	.13	.00	.17	--
826		Fracture of one or more phalanges of foot	.34	.00	.45	--
827		Other/multiple/ill-defined fractures of lower limb	.08	.00	.11	--
829		Fracture of unspecified bones	.13	.17	.11	1.52
830		Dislocation of jaw	.04	.00	.06	--
831		Dislocation of shoulder	.34	.00	.45	--
832		Dislocation of elbow	.04	.17	.00	--
834		Dislocation of finger	.25	.34	.22	1.52
836		Dislocation of knee [medial meniscus tear]	.21	.00	.28	--
840		Sprains/strains of shoulder/upper arm [trauma]	2.45	1.36	2.80	.49
841		Sprains/strains of elbow/forearm [trauma]	.59	.34	.67	.51
842		Sprains/strains of wrist/hand [trauma]	2.78	2.39	2.91	.82
843		Sprains/strains of hip/thigh [trauma]	.34	.68	.22	3.04
844		Sprains/strains of knee/leg [trauma]	3.59	3.75	3.53	1.06
845		Sprains/strains of ankle/foot [trauma]	6.33	6.48	6.28	1.03
846		Sprains/strains of sacroiliac region [trauma]	.59	1.02	.45	2.28
847		Sprains/strains of other/unspecified parts of back [of neck / trauma]	4.64	5.46	4.37	1.25
848		Other/ill-defined sprains/strains	1.10	.68	1.23	.55
850		Concussion	.76	1.19	.62	1.94
851		Cerebral laceration/contusion	.08	.00	.11	--
854		Intracranial injury of other/unspecified nature [head trauma]	.80	1.36	.62	2.21
871		Open wound of eyeball	.17	.00	.22	--
872		Open wound of ear	.04	.00	.06	--
873		Other open wound of head	1.60	.51	1.96	.26
878		Open wound of genital organs (external), including traumatic amputation	.04	.00	.06	--
879		Open wound of other/unspecified sites, except limbs [side]	.34	.34	.34	1.01

ICD-9 *		Visits/1,000/Month			Female
Code	ICD-9 Code Description	Total	Female	Male	-Male Ratio
880	Open wound of shoulder/upper arm	.13	.00	.17	--
881	Open wound of elbow/forearm/wrist	.63	.17	.78	.22
882	Open wound of hand except finger(s) alone	2.95	1.36	3.47	.39
883	Open wound of finger(s)	4.89	5.46	4.71	1.16
884	Multiple/unspecified open wound of upper limb	.17	.00	.22	--
890	Open wound of hip/thigh	.17	.17	.17	1.01
891	Open wound of knee, or leg (except thigh), or ankle	.59	.68	.56	1.22
892	Open wound of foot except toe(s) alone	.63	.68	.62	1.11
893	Open wound of toe(s)	.17	.00	.22	--
910	Superficial injury of face/neck/scalp except eye	1.81	1.19	2.02	.59
911	Superficial injury of trunk	.38	.17	.45	.38
912	Superficial injury of shoulder/upper arm	.13	.34	.06	6.09
913	Superficial injury of elbow/forearm/wrist	1.35	1.19	1.40	.85
914	Superficial injury of hand(s) except finger(s) alone	1.90	.85	2.24	.38
915	Superficial injury of finger(s)	3.71	3.41	3.81	.90
916	Superficial injury of hip/thigh/leg/ankle [knee pain]	1.39	1.88	1.23	1.52
917	Superficial injury of foot/toe(s)	.67	.68	.67	1.01
918	Superficial injury of eye/adnexa [eye/corneal abrasion]	5.40	6.82	4.93	1.38
919	Superficial injury of other/multiple/unspecified sites	2.95	2.22	3.19	.69
920	Contusion of face/scalp/neck except eye(s)	.76	.85	.73	1.17
921	Contusion of eye/adnexa	.21	.34	.17	2.03
922	Contusion of trunk [rib contusion]	.97	.68	1.06	.64
923	Contusion of upper limb [thumb]	2.87	2.90	2.86	1.01
924	Contusion of lower limb or other/unspecified sites	3.88	4.61	3.64	1.26
927	Crushing injury of upper limb	.55	.17	.67	.25
928	Crushing injury of lower limb	.13	.17	.11	1.52
930	Foreign body on external eye	3.88	3.58	3.98	.90
940	Burn confined to eye/adnexa	.34	.34	.34	1.01
941	Burn of face/head/neck	.21	.34	.17	2.03
942	Burn of trunk	.51	.17	.62	.28
943	Burn of upper limb except wrist/hand	3.33	2.39	3.64	.66
944	Burn of wrist(s)/hand(s)	1.43	1.36	1.46	.94
945	Burn of lower limb(s)	2.28	5.80	1.12	5.18
946	Burns of multiple specified sites	.04	.00	.06	--
949	Burn, unspecified	1.18	1.02	1.23	.83
957	Injury to other/unspecified nerves	.04	.00	.06	--
958	Certain early complications of trauma [infected wound]	.04	.00	.06	--
959	Injury, other/unspecified [motor vehicle accident / soft tissue injury / musculoskeletal trauma]	7.04	10.41	5.94	1.75
962	Poisoning by hormone or synthetic substitute	.04	.17	.00	--
977	Poisoning by other/unspecified drug/medicinal [overdose]	.08	.34	.00	--
980	Toxic effect of alcohol [drunk / alcohol intoxication]	1.31	1.19	1.34	.89
981	Toxic effect of petroleum product	.17	.17	.17	1.01
982	Toxic effect of solvent other than petroleum-based	.13	.34	.06	6.09
987	Toxic effect of other gas/fumes/vapor [smoke inhalation]	.25	.00	.34	--
989	Toxic effect of other substance, nonmedicinal as to source [TSS]	.30	.51	.22	2.28
991	Effects of reduced temperature	.04	.17	.00	--
992	Effects of heat/light	.59	.51	.62	.83
993	Effects of air pressure	.04	.00	.06	--

ICD-9 * Code	ICD-9 Code Description	Female Visits/1,000/Month -Male Total Female Male Ratio			
		Total	Female	Male	Ratio
994	Effects of other external cause [motion sickness / bug bite / electric shock]	6.28	13.99	3.75	3.73
995	Certain adverse effects not elsewhere classified [allergic reaction]	1.01	2.39	.56	4.26
996	Complications peculiar to certain specified procedures [vasectomy pain]	.04	.00	.06	--
998	Other complications of procedures, not elsewhere classified	.04	.00	.06	--
999	Complication of medical care not elsewhere classified [reaction to medication /allergy shots]	1.60	3.58	.95	3.76

**18 SUPPLEMENTARY CLASSIFICATION OF FACTORS
INFLUENCING HEALTH STATUS OR CONTACT
WITH HEALTH SERVICES (V01-V82)**

		134.8	183.2	118.9	1.54
V01	Contact with or exposure to communicable disease	.46	.00	.62	--
V03	Need for prophylactic vaccination/inoculation against bacterial disease [typhoid immunization]	3.25	1.02	3.98	.26
V04	Need for prophylactic vaccination/inoculation against certain viral diseases [flu shot]	.55	.68	.50	1.35
V06	Need for prophylactic vaccination/inoculation against combinations of diseases	.13	.00	.17	--
V07	Need for isolation/other prophylactic measures	.08	.17	.06	3.04
V19	Family history of other conditions	.04	.00	.06	--
V22	Normal pregnancy	.80	3.24	.00	--
V25	Contraceptive management [birth-control-pill refill / vasectomy-related]	5.95	22.52	.50	44.65
V26	Procreative management [family planning]	.25	.68	.11	6.09
V40	Mental or behavioral problems [emotional distress]	.13	.00	.17	--
V47	Other problems with internal organs [hormone shots]	.08	.17	.06	3.04
V49	Problems with limbs or other problems	.04	.00	.06	--
V53	Fitting/adjustment of other device [issued ear plugs]	.42	.34	.45	.76
V54	Other orthopedic aftercare [check/remove cast]	.38	.00	.50	--
V57	Care involving use of rehabilitation procedures [prescription renewal]	.17	.17	.17	1.01
V58	Other/unspecified aftercare [dressing change / suture removal / Rx refill /INH follow-up / nicorette gum]	13.71	13.82	13.67	1.01
V61	Other family circumstances [family counseling]	.04	.00	.06	--
V62	Other psychosocial circumstances	.13	.17	.11	1.52
V64	Specific procedures not carried out [no-show / left before treated]	.25	.17	.28	.61
V65	Nonsickness consultation	1.43	2.05	1.23	1.66
V67	Follow-up examination	.34	.17	.39	.43
V68	Encounter for administrative purpose [check-in/-out]	10.71	13.48	9.81	1.37
V68P	Encounter for administrative purpose, pregnancy-related	.04	.17	.00	--
V70	General medical examination [physical exam]	46.94	43.67	48.02	.91
V70P	General medical examination, pregnancy-related	.08	.34	.00	--
V71	Observation/evaluation for suspected conditions [over-the-counter meds]	2.19	2.73	2.02	1.35

ICD-9 * Code	ICD-9 Code Description	Visits/1,000/Month			Female -Male Ratio
		Total	Female	Male	
V71P	Observation/evaluation for suspected conditions [over-the-counter meds/ pregnancy-related]	.08	.34	.00	--
V72	Special exam [dental / visual / audio /x-ray / salpingoscopy / Jaeger's Test / CAAC]	14.64	13.14	15.13	.87
V72P	Special investigations/examinations [pregnancy-related]	.08	.34	.00	--
V73	Special screening examination for viral diseases	.04	.00	.06	--
V74	Special screening for bacterial/spirochetal disease [TB / PPD / took culture / premarital]	3.16	2.56	3.36	.76
V75	Special screening exam for other infectious diseases [overseas screen]	.25	.00	.34	--
V76	Special screening for malignant neoplasm [Pap / pelvic]	7.80	31.05	.17	184.70
V77	Special screening for endocrine/nutritional/metabolic/immunity disorder [body fat/weight/HIV screen]	4.09	4.61	3.92	1.17
V78	Special screening for disorders of blood or blood-forming organs	.30	.00	.39	--
V79	Special screening for mental disorder/developmental handicap [DAPA/substance abuse screen]	1.18	.68	1.34	.51
V80	Special screening for neurological/eye/ear disease	.21	.00	.28	--
V81	Special screening for cardiovascular/respiratory/genito-urinary disease [BP check / EKG / HTN screen]	8.35	4.78	9.53	.50
V82	Special screening for other conditions [blood pressure for PFT/other / HCT]	1.22	.68	1.40	.49
V82P	Special screening for other conditions, pregnancy-related [pregnancy test/HCG]	4.77	19.28	.00	--

* 'P' suffix indicates diagnosis was specified in sickcall log as pregnancy-related.

@ Numbers in parentheses represent the range of ICD-9 codes within that category.

Terms in brackets represent frequently occurring shipboard examples.

APPENDIX C

Reduced Copy of Sick Call Log Used for Data Collection

SICK CALL LOG

NHRC WILL TRANSFORM DIAGNOSIS INTO AN ICD-9 CODE.
PLEASE PROVIDE SUFFICIENT, LEGIBLE INFORMATION.

SAP STATUS: ☐ AT SEA ☐ IN PORT

DATE: _____

PATIENT INFORMATION				COMPLAINT & DIAGNOSIS		SERVICE / PROCEDURE		TREATMENT STATUS		
TIME-IN	1. NAME	3. SEX 1 MALE 2 FEMALE	5. PAYOR E W	7. RATE O W	9. COMPLAINT 10. DIAGNOSIS (& TREATMENT)	1. PHARMACY 2 X RAY 3 LAB TEST 4 MANUIZATION 5 AUDIOGRAM 6 ECG 7 PHYSICAL EXAM	8 BIRTH CONTROL PILLS 9 PREGNANCY TEST 10 GRAM STAIN / CERVICAL CULT 11 KOH PREP / WET MOUNT 12 PAP TEST 13 PELVIC EXAM 14 OTHER	1. SENIOR PROVIDER SEEN 1 H M 2 M O 3 PA / NP 4 OTHER	2. VISIT STATUS 1 INITIAL 2 FOLLOWUP 3. DUTY STATUS 1 FULL DUTY 2 LIGHT DUTY 3 NO DUTY / SQ	4. DISPOSITION 1 RESOLVED 2 RETURN PRN 3 RETURN VISIT 4 REFERRED 5 HOSPITALIZED 6 MEDEVAC
TIME-OUT:	2. SSN:	4. SHIP'S CREW? 1 YES 2 NO	6. AGE	8. DIV:						
TIME-IN	1. NAME	3. SEX 1 MALE 2 FEMALE	5. PAYOR E W	7. RATE O W	9. COMPLAINT 10. DIAGNOSIS (& TREATMENT)	1. PHARMACY 2 X RAY 3 LAB TEST 4 MANUIZATION 5 AUDIOGRAM 6 ECG 7 PHYSICAL EXAM	8 BIRTH CONTROL PILLS 9 PREGNANCY TEST 10 GRAM STAIN / CERVICAL CULT 11 KOH PREP / WET MOUNT 12 PAP TEST 13 PELVIC EXAM 14 OTHER	1. SENIOR PROVIDER SEEN 1 H M 2 M O 3 PA / NP 4 OTHER	2. VISIT STATUS 1 INITIAL 2 FOLLOWUP 3. DUTY STATUS 1 FULL DUTY 2 LIGHT DUTY 3 NO DUTY / SQ	4. DISPOSITION 1 RESOLVED 2 RETURN PRN 3 RETURN VISIT 4 REFERRED 5 HOSPITALIZED 6 MEDEVAC
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TIME-OUT:	2. SSN:	4. SHIP'S CREW? 1 YES 2 NO	6. AGE	8. DIV:						

APPENDIX D

NARRATIVE COMMENTS PROVIDED ON QUARTERLY SUMMARY REPORTS BY SHIPBOARD HEALTH CARE PROVIDERS

Responses from shipboard Senior Medical Department Representatives to the following question on Quarterly Health Care Requirements Assessment forms: Please identify and discuss any issues regarding health care delivery to females aboard your ship (e.g., IDC training, AMAL, required deviation of ship's schedule, etc.). Responses are grouped by the following major content areas: care issues, policy issues, staffing issues, training issues, and supply issues. Information in brackets identifies the level of health care provider and the quarterly report date.

Care Issues – Volume and Unique Requirements

Although women constitute a minority on board, our data seems to confirm that they require proportionally more health care. [MO, September, 1989]

As Medical Officer, I have been confronted with numerous female health problems both at sea and in port. The shipboard health care provider on a coed ship must be competent at diagnosing female pelvic, abdominal, and breast disorders, pregnancy, and understanding female psychiatry. [MO, December, 1988]

This ship is currently manned by one medical officer. The ship's manning document includes no other qualified personnel who can perform physical examinations, fitness for duty evaluations, confinement physicals, annual pap smear evaluations or pelvic examinations in the work-up of infections, abnormal menses or bleeding during pregnancy. Additionally, counseling regarding pregnancy matters are handled by the medical officer. The aforementioned coupled with the unscheduled evaluations for psychological problems or emergencies from our own ship, or from other ships without a medical officer, lead to tight scheduling of patients and a fine balance with administrative responsibilities and meetings as a Department Head. [MO, March, 1989]

Some females reporting aboard ship require additional education on birth control, sexually transmitted diseases and the Navy's policy on pregnancy. [MO, September, 1989]

Women comprise 30% of the crew and account for 43% of the medical department visits. There were 7 new pregnancies in the last 6 weeks of the deployment, and 11 this quarter. This equates to 0.9% of the crew and 2.9% of the women on board becoming pregnant this past quarter and 17.7% of the women on board becoming pregnant in the last 15 months since this study was initiated. Note also that the majority of women still see the physician rather than the PA and that the physician sees more women (36% more) than men. [MO, December, 1989]

27% of the ship's company is female. Females account for 45% of sick call visits, and 47% of the Medical Officer visits which require a physician or a specialist. 56% of the unscheduled Medical Officer appointments are made by females. 39% of the urgent consults are made for females. Women account for all the urgent URO or URO/GYN appointments, but only 24% of urgent ORTHO and 23% of urgent PSYCH. [MO, June, 1989]

On this ship, 31% of the ship's company is female. 42% of all sick call visit are made by females. 44% of all visits to the Medical Officer and 50% of the unscheduled

appointments are made by females. Females account for 43% of all consultations and 47% of urgent consultations. 71% of the consultations in the URO and GYN category are females, and over half of the females referred within this category were classified as urgent. 53% of psychiatric referrals were females. The impact of females upon the health care system can be better understood by comparing the previous quarterly report with the current report. As the percentage of females aboard this ship rose from 23% in the last quarter of 1988, to 31% in the first quarter of 1989, the percentage of females attending sick call rose from 35% to 42%. The percentage of Medical Officer visits rose from 38% to 44% and the percentage of consultations rose from 37% to 43%. It is encouraging to note that, in general, the increase in percentage of medical services given to females is no greater than the increase in the percentage of women aboard. The two notable exceptions to this statement are the number of pelvic exams, which is greater by 47% (from 73 to 107), and the number of pregnancies, which has increased by 114% (from 14 to 30). Other factors, such as increased vigilance in the performance of routine Pap smears and the upcoming deployment, may play a role in these significant increases. It is interesting to note that the 44 pregnancies that have occurred in the last six month period represent 3.5% of the crew and 13.3% of the females aboard (using average number of females and crew members from this quarter and last). [MO, March, 1989]

Additional information, primarily concerning Medical Officer appointments and specialty consultations, is also included to better explain the unique requirement females place on the Medical Department. 23% of the ship's company and 40% of the Medical Department are female. Females accounted for 35% of sick call visits, 38% of MO visits, 37% of all consultations, 45% of physician-level MO visits, and 64% of specialist-level MO visits. They were also responsible for 50% of the unscheduled MO visits and 54% of the urgent or after hours consultations. Females account for 56% of the Psychiatric referrals (60% of urgent referrals) and 75% of the repeat consultations sent in the same calendar month. There are twice as many GYN referrals as there are urology referrals and 60% of the GYN referrals were on an urgent basis. Females account for only 17% of the ORTHO referrals. 4.9% of the women aboard became pregnant during this quarter which extrapolates to almost 20% of the females aboard or 4.5% of the crew becoming pregnant each year. The impact of women on the ship's health care delivery system is obviously quite significant. [MO, December, 1988]

A...comparison of the number of psychiatric problems of females versus males...was looked at due to the subjective feeling that there were more psychiatric evaluations performed on women aboard. Results in the past 3 months revealed that of seven psychiatric consults, 2 were males, 5 were females. [MO, March, 1989]

Patient Data:

Admissions: Men: 6 (3%), Women: 3 (13%).

Psychiatric Discharges: Men 1, Women 1. [PA, March, 1989]

Note 3 admissions:

2 psych admits for suicide attempts - both male.

1 ENT admission for peritonsillar abscess - female.

2 male civilians (shipyard workers) seen for first aid - chemicals in eyes. [PA, December, 1988]

Medevacs:

2 (male) psychiatry cases,

1 (male) trauma to hand (amputated finger). [MO, December, 1989]

15.3% female visits during this reporting period. Male consults include 4 for obesity and 1 emergency assault case. [PA, December, 1989]

During deployment period, received medevac from [another ship] and transferred to [another ship] after examination. [MO, December, 1989]

Five males and 4 females were airlifted to MTF's for medical treatment not available on board. These were in addition to the MAE's. Quite a few of these patients were admitted to the MTF's; the majority of which have since returned to the command. This has been a very busy deployment thus far! [MO, December, 1989]

The operational schedule of this ship is significant. Over a 92 day period, this ship was steaming 52 days, of which 30 days were independent of other ships and possibility of MEDEVAC was more difficult to accomplish. There were four port calls made during these underway periods. [PA, September, 1989]

The operational schedule of this ship is significant. Over a 75 day period this ship was steaming 57 days, of which 44 days were independent of other ships and possibility of MEDEVAC was more difficult to accomplish. There were two port calls made during these underway periods. [PA, June, 1989]

Policy Issues -- Pregnancy, Fraternization

Just prior to underway periods there is a notable increase in the number of women requesting pregnancy tests, including multiple retests up to the times the ship leaves port. The ship has had to establish a policy on pregnancy testing to preclude last minute manning disruptions and unnecessary work for the Medical Department. [MO, September, 1989]

For the [upcoming] underway period in July, pregnant females aboard this ship at present will not get underway with the ship, at the CO's discretion. [MO, June, 1989]

As Commanding Officer, I recently changed my policy with regard to taking women to sea. Previously once a female was tested positive for pregnancy she would be sent TAD when the ship went to sea. New policy states pregnant women will go to sea under guidelines established under OPNAV instruction 6000.1A. I believe this policy better supports the Navy's policy on pregnant women afloat. The only issue I have on this new policy is "high risk" pregnancies. My medical officer does not believe he is fully qualified to determine which pregnant women are "high risk." The OB/GYN specialist at the Navy Regional Medical Center has made the call and I am comfortable with this process. The ship's medical officer also does not feel comfortable with taking pregnant women to sea under any circumstances. He believes he could be held liable should anything happen to a pregnant sailor while the ship is at sea. I am accountable, however, and I have high regard for the inputs of a qualified medical officer. [MO, September, 1989]

Two pregnant females accompanied ship to Refresher Training in Cuba and to 4-day port visit to Fort Lauderdale. No problems. [MO, December, 1989]

The total number of pregnancies diagnosed (27) does not necessarily reflect the total number of women who required transfer from this command, as two elected to terminate their pregnancies and two miscarried. [MO, September, 1989]

The number of new pregnancies (9) on this ship reflects total number of newly diagnosed pregnancies and does not necessarily reflect total number of persons transferred from this command (i.e. some elected to terminate their pregnancies). [MO, March, 1989]

Six of the pregnancies in this reporting period were diagnosed in the three weeks after deployment. Twelve of the pregnancies were diagnosed in the month before deployment. Transfer of pregnant individuals from overseas locations has taxed the ships TADTAR funds (\$5,500). [MO, September, 1989]

The number of pregnancies per quarter reported has ranged as follows: Jan-Mar = 09; Apr-Jun = 16; Jul-Sep = 25; Oct-Dec = 11. It is interesting to note, that there was an increase in the incidence of pregnancies in the months preceding deployment, although none of the women counseled admitted to intentionally getting pregnant for the purpose of getting out of deployment. As reported in last quarter's correspondence, \$5,500 TADTAR funds were expended to transfer pregnant members diagnosed after the ship got underway. We have since learned that pregnant women should be transferred to the nearest shore facility on TEMAD orders to await PCS orders to CONUS (IAW COMNAVSURFPACINST 1300.1).

Despite our deployed status, eleven pregnancies still occurred this quarter. The ship has continued to receive new personnel monthly, and some of the new female members who arrive on the ship are arriving pregnant. A random study of 55 records of "New Check-Ins" revealed the following: 19 women were never tested for pregnancy prior to transfer; 17 had a urine pregnancy test within 8 weeks of transfer; 14 were tested within 8-24 weeks of transfer; 5 were tested at greater than 24 weeks before transfer.

From the above it is obvious that several pregnancies could occur prior to transfer without ever being detected. Although it is not feasible that every pregnancy be diagnosed, certainly better compliance with MILPERSMAN 3810170 and TRANSMAN Art. 3.194 which requires pregnancy testing of female members prior to transfer to shipboard duty, transfer to type 2 or 4 duty, or 7-10 days prior to transfer from apprenticeship training, would reduce the number of unplanned losses to ships.

Additionally, other issues have surfaced with respect to pregnancies while on a ship in a deployed status or in certain overseas billets. The first is the issue of unwanted pregnancies and the options available. Clearly, every month pregnancies occur which go unreported to medical officers because the member finds a way to abort the pregnancy. In San Diego, a women has choices and legal facilities available to her even though the USN does not offer this service unless it is medically indicated. These procedures are generally uncomplicated if done at an early stage, and often have little impact on job performance.

In the Philippine Islands, abortion is illegal. Women stationed in Subic Bay or on a ship deployed to the area are limited in their choices should they become pregnant. One can either transfer to shore and await PCS orders, take personal leave to an area in which abortion is legal (i.e., Japan or HI), or trust that she can find a physician who will perform the procedure illegally, and hopefully safely. If one elects to fly to another area to abort the pregnancy, she incurs the cost of travel, the procedure, lodging and whatever other expenses that arise. For the E3 and below, the group of women with the highest pregnancy rate, the expense is often the deciding factor. These women either decide to keep the unplanned pregnancy or seek alternate medical care. In Japan, the procedure is available, expensive and yet is not always standardized like in the U.S. A complication from such a procedure can have a significant impact on a command, especially if the problem arises after a ship has gotten underway for Hawaii, for example.

The goal of "Pregnancy Awareness Training" is to train all crew members in the

Navy's regulations regarding pregnancy, and to enlighten member on available contraceptive measures. Despite an aggressive program aboard, the training appears to have little impact on pregnancy rate. The bottom line is that pregnancy occurs largely because of a complacent attitude about the responsibilities and expense of childbirth, or because of naive thinking by women who think it will never happen to them. Therefore, since the pregnancy rate appears to be fairly constant for a given population, the USN has to consider options which are economically sound and which facilitate smooth transitions for pregnant members and for the commands to which they belong. One example would be to consider making abortion an option available through military facilities, while in the overseas or deployed status. I'm not advocating abortion as a birth control method, however I am trying to point out that it is a widely available alternative to [some] U.S. women and not others. Offering of this service could ensure a safe operation, reduce the number of single, unmarried and unprepared mothers, as well as the cost to the government for PCS orders or medical care that has to be administered because of a complication of an illegal or ill-performed procedure. [MO, December, 1989]

The problem of service members arriving at the command pregnant: A service member recently reported on board 31 weeks pregnant. She did not realize that she was pregnant (it was noted while completing a replacement physical). I recommend that all women reporting to sea duty have a documented negative pregnancy test in their records (just as HIV tests are required) prior to transfer to a sea billet. This should help ease some of the unplanned losses to ships. [MO, March, 1989]

Of two patients pregnant in 4th quarter, 1988, one patient was transferred off of the ship at 20 weeks gestation. The other patient suffered a miscarriage (spontaneous AB) at 14-15 weeks following a septic illness. Her product of conception was termed viable as the fetus was independently breathing, but birth was not considered as fetus was less than 20 weeks and would not have survived. Patient required lengthy hospitalization (greater than two weeks) and subsequent grief counseling. [PA, March, 1989]

Women comprise 29% of the crew and account for 40% of the Medical Department visits. Of the seven new pregnancies, one was inadvertently transferred to our ship while already known to be pregnant, and the other six conceptions occurred prior to deployment. The total number of pregnancies for this fiscal year is 55 (14+11+23+7) which is 4.7% of the current crew and 16% of the current number of women aboard. [MO, September, 1989]

There have been 67 pregnancies in the past 9 months. This extrapolates to almost 7.3% of the crew and over 27% of the women on board becoming pregnant each year. [MO, June, 1989]

The number of pregnancies (15) this quarter on this ship is unusually high, reason unknown. Based on previous years data, 35-45 pregnancies occur each year. This approximates to about 10-15% of the female population. Interestingly, the SK rating, or S-1 Division, has had the preponderance of pregnancies aboard our ship. This has significant manning repercussions. When we go to sea, this division loses 25-30% of its manning. Additionally, they are constantly training new personnel. Also, the QMs on board are almost entirely female. If a "wave" of pregnancies hit the division in which QMs are assigned, shipboard navigation would suffer. NMPC needs to take the sex of an individual into account in its manning decisions to preclude a similar problem from recurring. [MO, June, 1989]

[On this ship,] an interesting dilemma occurs as a result of males and females being in the same command in the Navy due to the fraternization policy. When a patient, male or female, is identified as having a sexually transmitted disease, he/she is immediately interviewed by our PMT. Due to the fear of being prosecuted for fraternization, we sometimes have difficulty eliciting all of the patient's sexual contacts, making further treatment (and consequently, prevention of still further spread) impossible. However, with the recent clarification of the OPNAVINST on fraternization, this may become less of a problem. [MO, March, 1989]

Staffing Issues – Type, Number, and Gender of Medical Department Personnel

In April, my senior chief PO was replaced by an IDC who has filled a 0000 NEC billet. As such, she administratively loses her NEC and is not authorized to assist with the above mentioned examinations. If allowed to maintain her NEC, she could be trained by me to perform routine pelvic examinations which alone, would lighten my workload and expedite patient health care delivery. [MO, March, 1989]

Our ship recently gained a Physician's Assistant (PA) who is qualified to provide care to women. This has vastly increased the number of patients able to be seen, and the quality of care for both men and women. Currently the PA has an office (until recently the MO and PA worked out of the same space) and will soon have all the equipment to provide efficient basic care for women. [MO, September, 1989]

A female Medical Officer or Physician's Assistant would alleviate the problem of lost work hours due to females who seek GYN care at other facilities because they prefer a female practitioner. [MO, September, 1989]

An OB/GYN nurse practitioner or physician's assistant would substantially improve the patient flow and quality of care since women presenting with abdominal pain, vaginal discharge, and possible pregnancy generally need a pelvic exam. Review of GYN acute care sheets, NAVCARE sheets and emergency room treatment sheets shows that a significant number of women are seeking care off the ship for their OB/GYN problems. [MO, September, 1989]

The females on board generally prefer to go to the hospital for female problems. [MO, September, 1989]

As the percentage of females on board submarine tenders [ASs] continues to increase, the need for additional medical personnel becomes more acute. A Physician Assistant, Nurse Practitioner (OB/GYN), Assistant Medical Officer, or an IDC (trained in gynecology) would be a valuable asset to the tender population. [MO, September, 1989]

Medical department manning [on this ship] may need to be increased. A woman reporting to sick call, on average, requires more clinical time to resolve or treat a medical problem. In addition, some examinations (i.e., pelvic) require a standby observer. [MO, September, 1989]

While we have female crew members on board this ship, we have no females in the medical department. This presents a problem with standbys for examining female patients. [MO, June, 1989]

Manning of HM's should be increased by two with the billets mandated as female to

better accommodate the needs of the doctors for female standby's. Female IDC E5/E6 billet should be considered for sick call screening. Female 8432 billet should also be considered for female STD interviews and habitability inspections. Many patients are more comfortable with providers of the same sex. [MO, September, 1989]

There are a large number of pelvic exams to be done on a coed ship. I need a female as my standby, which prevents the only female in our department from doing her other duties. Also, most females are uncomfortable with using a male corpsman as a standby. More than one female corpsman needs to be assigned to each coed ship. [MO, December, 1988]

There are numerous subtle issues regarding health care of female personnel. On our ship, there is only one adequate area for pelvic exams and two "private" exam rooms in Medical. Due to the coed crew many examinations which are performed "in the open" on an all male ship must be done in private. This slows the overall sick call process in that both males and females with medical problems in the genital area must wait for these two rooms to become available. Additionally, all pelvic, breast, and genital/inguinal area exams performed on females require a female corpsman (often in short supply - the 3 female corpsmen aboard include one sick call corpsman, one pharmacy tech, and the LPO). This is especially significant in that the sex of replacement corpsmen needs to be taken into account in detailing. Ideally, the male:female ratio of corpsmen should more closely resemble to male:female ratio of the sick call population (vice the ship's population). This also means for pelvic and breast exams, that double manpower (doctor and corpsman) is required. I often find that female personnel requiring pelvic exams are deferred until near the end of sick call since I can provide assistance to several corpsmen (and patients) in the time it takes to do one pelvic exam. This results in female personnel spending more time out of their spaces. [MO, December, 1988]

Training Issues – IDC Training

Additional training is required for all corpsmen for specific female related health issues. [MO, September, 1989]

IDC training requirements in area of OB & GYN are inadequate. [IDC, December, 1988]

SMDR has had very little training and no experience in pelvic exams. [IDC, September, 1988]

IDC training is inadequate to properly prepare the IDC to perform biannual pelvic exams. A minimum rotation of two weeks in an OB/GYN clinic needs to be added to the 8425 curriculum. At least two days in an OB/GYN clinic performing pelvic exams should also be added to IDC refresher training. [MO, September, 1989]

GYN training for the current IDC was limited to a two week rotation in the GYN clinic. There was no didactic presentation in the classroom. Fortunately, our ship has not experienced serious gynecological illnesses, but the potential is there, especially when evaluating abdominal pain. A thorough classroom presentation should be made to both male and female IDC students, in conjunction with the two week clinical rotation for female IDC students. [IDC, December, 1988]

The IDC aboard is a recent graduate of Advanced Hospital Corps School (AHCS) and

has received didactic training in GYN. No practical training was completed as original PCS orders were to a ship without females. Orders were modified, IDC transferred here to fill open billet from unplanned loss. Recommendation: Standardize training at AHCS to include practical training in GYN regardless of type duty specified on original orders. [IDC, December, 1988]

The Independent Duty Corpsman (IDC) is given approximately one day of OB/GYN training in IDC school. If the IDC is to be effectively trained in GYN, recommend the following: two weeks rotation in OB/GYN, written GYN protocols, and annual one week refresher training and certification by gynecologist or family practitioner. [PA, September, 1989]

I have implemented a GYN PQS training for my IDC on this ship and she is now able to diagnose and treat routine GYN problems which eases the MO workload slightly. I plan to train all my medical duty department heads with the same PQS, so they may treat routine problems on the weekends. I am also submitting a copy of this GYN PQS to SURFPAC through my chain of command. [MO, March, 1989]

Provide OJT to IDT at NRMCC Pearl Harbor laboratory. This training should reiterate the previous training accomplished in Advanced Hospital Corps School. It should include specific training in techniques, procedures, and quality control in medical microbiology, with particular emphasis on anaerobic culture procedures. After accomplishing this training the IDT should be able to establish a quality assurance program. [PA, June, 1989]

Supply Issues – AMAL, Facilities

Present AMAL for this ship needs to be updated for PA and for women. [PA, June, 1989]

0929 Female AMAL is on board with the exception of sulfanilamide, supp, vaginal; 6505-01-266-6524 which is currently back ordered. [IDC, September, 1988]

AMAL 0929 (Basic Women at Sea emergency kit for IDC) requires revision, AMAL changes have been submitted via chain of command. [IDC, December, 1988]

A review of our current AMAL 930 was completed this quarter to determine usage of items for care of females. Input was submitted to COMNAVSURFPAC (Force Medical). [MO, September, 1989]

During this quarter, a recommended change to the AO 177-class AMAL, specifically, Women At Sea AMAL, was made to TYCOM. This recommended change requested that physician AMAL 0930 be carried vice 0929. It was recommended that all quantities of contraceptive medication be reduced by 75% to keep in line with AO 177-class AMAL numbers. It was also recommended that all surgical instruments be retained. It is recognized that surgical skills of PA's or NP's would be in an assist mode only; the medical officer who would be on board when operating in a battle group would need to have readily available equipment. The above mentioned incubator with anaerobic capability was also recommended to TYCOM for AMAL addition. [PA, September, 1989]

AMAL does not provide "Premarin" for hormone therapy for women who have hysterectomies. [PA, December, 1988]

AMAL for women is inadequate to provide proper support. Quantities for BCP's are not high enough. Quantities of Ceftriaxone are not large enough. Other medications used for the treatment of vaginitis and PID are, likewise, inadequate. [MO, September, 1989]

There are multiple brands of birth control pills. Accommodating each patient with her preferred brand requires stocking a wide range of pills and frequent reorder to meet demand. [MO, September, 1989]

As an additional note regarding health care delivery to females, Ortho Novum 7-7-7 has recently been added to the AMAL for ships carrying women but is still not actually on board as it has been on order for six months. This in turn is causing a shortage of Ortho Novum 1-35 on board because this has been used as a substitute for Ortho Novum 7-7-7. [MO, September, 1989]

Preliminary Chlamydia information: During the past four months, I have sent routine Chlamydia E/A on all routine pelvic exams. Most patients have absolutely no symptoms and frequently have a normal pelvic exam. Preliminary figures are showing a 10-15% positive E/A result on these personnel. Based on this information, I would strongly recommend that some form of Chlamydia test kit be purchased and made available to deploying units (at a minimum). I hope to publish my findings after some further data collection, but based on preliminary information, it would appear that routine Chlamydia cultures are indicated in our population. [MO, June, 1989]

GYN care on board smaller vessels without lab technicians (NEC 8401) questions the veracity of lab results. Quality assurance of medical care for vaginal/cervical cultures, wet mounts, HCG and urinalysis is doubtful. The trauma of evaluating a female patient with a pelvic exam only to refer her to a shore based military medical facility solely for vaginal/cervical cultures (because of quality control issues, lack of gonorrhea and chlamydia cultures on board smaller vessels, and media/test transport) questions the need to perform the initial pelvic exam on women on board the ship while in port. However, referring the female patient to the shore based medical facility whenever the need for a pelvic exam occurs in port is likely to cause the female patient to doubt the capability of the provider at sea. Some solutions for this particular problem would be to include small Thayer-Martin culture media with inherent CO2 capabilities into the existing water bacteriological incubator and QA the results with litmus paper. Chlamydia microtrak direct specimen tests are reliable and results available in 24 hours from laboratories who perform the test. In an underway status, patients are treated for the clinical appearance and the need to "shotgun" treat such problems if port of call is not reasonably soon. [PA, March, 1989]

Doing pelvic exams on women aboard ships without the capability of providing gonorrhea cultures and slides for chlamydia infections can be a frustrating experience for both patient and provider. Highly recommend use of rapid tests for G.C. and Chlamydia. Both are available from "open purchase" by labs such as Abbott, Gurnetx-Bristol, etc. [PA, December, 1988]

Suggestions to add [to AMAL 0929]: On board gonorrhea test kit - like RPR/HCG because females can not be diagnosed by gram stain. Overkill with antibiotics is not optionally the best health care. Also on board chlamydia test kits would be helpful. Especially for ships without lab tech/lab that has female crew. I know Abbott makes both G.C. and chlamydia test kits. Also, we have a monospot cardtest and mono is not treatable, but we don't have a streptest available. Yet, strep throat is treatable and

"curable". [PA, September, 1988]

Other lab tests which are of interest and easy to use and store on board the ship are:

- a. Leukocyte Testing Strips
- b. Pregnancy Testing [PA, March, 1989]

I recommend all HCP [health care providers] on coed ships have serum B-HCG at their disposal. [MO, December, 1988]

Urine HCG kits purchased through the Navy supply system need to be evaluated for sensitivity. Many pregnancies are undetected until late in the first trimester even though the patient appears to be pregnant. This necessitates having an increase of serum HCG done by civilian sources. [MO, December, 1988]

The 929 AMAL lists Pregnosticon pregnancy test (human chorio gonadotropin test kit NSN 6550-01-037-4877) as the authorized pregnancy test for shipboard use. This MUST be changed. For the past three quarters, this kit has been mentioned as being less than adequate. NOW it becomes clearly inadequate to the point of endangering patient care. In the past year, 27 pregnancy tests have been done on board. Of these, four were false negatives (14%) and two were false positives (7%). Both of these rates are unacceptable to good patient care. Every pregnancy test done on board must be verified by a shore facility lab using a more reliable testing method. This can become critical. Recently we were underway as part of an extensive operations (PACEX) and a patient had missed her period by two weeks. The on board test (Pregnosticon) was negative. We pulled into port for one day only and submitted a pregnancy test - that test was positive. Had we not pulled into port and the young lady had had an ectopic pregnancy or an abortion, (i.e. miscarriage) there would have been no way for us to know that she was in fact pregnant. The potential for delayed care in the circumstances is high. That did not happen, but it could have happened. An accurate early pregnancy test is a must on board. I highly recommend the Abbott or Target pregnancy tests used at almost every shore-based facility and on most tenders. [PA, September, 1989]

Pregnosticon pregnancy test is a poor test to use - it has a moderate reliability ratio. Recommend HCG tests like "Target", "Abbott" - which gives results (with testing control) with reliability of >98%. [PA, December, 1988]

Additional equipment, such as a doppler, paper sheets/gowns, proper incubator for growing out chlamydia cultures, needs to be added to the AMAL. [MO, September, 1989]

With the additional manning of women to AO Cimarron-class ships and the lack of an adequate incubator and appropriate equipment to perform anaerobic cultures, all health care providers are at risk for providing sub-optimal community standard of care to our new female population. It is anticipated that 46% of the crew will be female in the near future. With the inability to diagnose or rule out bacterial infections such as Neisseria Gonorrhoeae in a young sexually active community, this presents a problem. This report clearly demonstrates a need for the ability to diagnose sexually transmitted diseases. [PA, September, 1989]

With the addition of enlisted women to certain AO ships and the lack of an adequate incubator and appropriate equipment to perform anaerobic cultures, all health care providers are at risk for providing less than optimal community standards of care to our female population. It is anticipated that 46% of the crew of this ship will be

female in the near future. With the inability to diagnose or rule out bacterial infections such as Neisseria Gonorrhoeae in a young sexually active community, this presents a problem. This initial report clearly demonstrates a need for the ability to diagnose sexually transmitted diseases. [PA, June, 1989]

The female component represented only 86 visits over a 92 day period. Of these visits, 10% were referred to a GYN facility due to the inability to perform culture and sensitivity of cervical secretions. [PA, September, 1989]

The female component represented only 69 visits over a 75 day period. Of these visits, 26% were referred to a GYN facility due to the inability to perform culture and sensitivity of cervical secretions. The following...is recommended:

- a. Procure bacterial incubator for this ship. This can be done utilizing excess material from NAVMEDMATSUPPCOM.

- b. Procure required material via federal supply stock system utilizing ship's OPTAR (candle jar, culture medium, etc.) [PA, June, 1989]

AMAL 0929:

- a. Recommend Pederson speculums (small & medium).

- b. #6515-01-149-8842 gloves specify size 8 - couldn't there be an optional size? I, for example, wear size 6 1/2 gloves.

- c. #6530-00-709-3000 table, examining steel. The table is "totally" inadequate for frequent pelvic examinations. [PA, September, 1988]

Facilities are inadequate. Currently, there is only one room that is adequately situated for the performance of pelvic exams. If the squadron could be moved to another location on the ship, we would have two rooms that were properly situated in terms of privacy and equipment to perform pelvics. [MO, September, 1989]

Structural layout does not provide for adequate privacy during GYN exams. PA office could be restructured for GYN exam room. [PA, December, 1988]

Routine exam table that was fitted with stirrups is cumbersome. Exams would be less uncomfortable with GYN table that has adjustable equipment. [PA, December, 1988]

The daily routine of the medical department would operate smoother with a dedicated incoming and outgoing telephone line. The use of an ancillary office space, for consultation calls, necessitates transportation of the records and all reference material into a nonmedical work center. [PA, December, 1988]

The budget authorized for ships with the new Women At Sea AMAL has not increased commiserate with the increased costs of additional patient load and medications required to support female augmentation on board ships. Recommend an increase in budget allowance. [PA, September, 1989]

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19 ABSTRACT (Continue on reverse if necessary and identify by block number) In response to a request from the Bureau of Medicine and Surgery, this study was conducted to identify health care requirements of women aboard Combat Logistics Force ships and recommend medical department adjustments to meet those requirements. From October, 1988, to October, 1989, summary patient data were collected quarterly from 20 ships representing 62,671 patient sick call visits. Approximately one-fourth of the crew members were women. Additional male and female patient encounter data were collected during November, 1988, and June, 1989, from 12,542 detailed sick call log entries aboard 20 ships. Results demonstrated that the monthly sick call rate for women (788/1,000) was 1.79 times greater than the monthly rate for men (440/1,000). Although sex differences in rate were greatest for genitourinary disorders (13:1), women visited sick call more than men for most illness categories. About 25 percent of all female illness-related visits were for female-specific problems, including urinary tract infections and sexually transmitted diseases. There were only minor sex differences in the number of services/procedures				
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19. ABSTRACT

received, visit disposition, or duty status. Approximately five percent of the female crew became pregnant each quarter.

Given projections of female-specific disorders developed from these data, approximately 100 Navy health care providers were surveyed to provide senior medical department staffing recommendations for salvage ships, oilers, ammunition ships and stores ships. On balance, these survey results suggested that all salvage ships and oilers with less than 75 women aboard should be staffed with an independent duty hospital corpsman. A physician's assistant should serve aboard oilers with more than 75 women assigned, all ammunition ships with women assigned, and combat stores ships with less than 150 women aboard. Medical officers should be assigned to combat stores ships with more than 150 women. Results and recommendations are discussed in terms of preventive medicine and medical department staffing policies afloat. A complete list of recommendations, detailed illness prevalence estimates, and narrative comments from shipboard health care professionals are provided at the end of this report.